

University of Tampere

Recommended by Algorithm

Relevance, Affordances and Agency of Music Recommender Systems

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May 2018

Abstract

University of Tampere

Cultural Studies / Faculty of Communication Sciences

”Recommended by Algorithm: Relevance, Affordances and Agency of Music Recommender Systems”

Master’s thesis, 106 pages + appendices 1 page.

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Software has indeed become an essential part of how cultural artifacts are circulated. Due to advancements in technology in the last decades, a significant amount of our everyday life activities is now mediated by these various applications. Software does not, however, only provide us tools we need; it also shapes our actions and transfers our boundaries of abilities to act. Therefore, it is not enough to analyze the relationship between user and technology only as a relationship between an actor and a tool. Instead, the relationship should be problematized and it should be acknowledged that it has become more complex and intertwined than ever before.

In my thesis, I focus on music recommender systems that are great examples of software technology since they increasingly influence on what information we receive and perceive most relevant. They also represent the development in which personalization and customization of services are becoming more common. In overall, these systems have been studied mostly from the technical perspective leaving a more cultural approach and user point of view often disregarded. In this thesis, I sought to fill this gap in research by focusing on the user experiences instead of the systems. My main research question was: “how recommender systems shape and participate in the practices of music discovery and consumption of the users?”. This question was further divided into three themes: taste, relevance and agency.

In order to be able to answer my research questions, I interviewed eight people by using semi-structured focused interview as my data collection method and analyzed it by using theory-related content analysis. The interviews were conducted in Finnish as well as the analysis. The quotations presented in this thesis, however, are translated into English.

The results suggest that the user perceptions of the ability of the recommender systems to learn the taste of the user varied a lot. For some, recommendations were accurate and constructed a stylistic or aesthetic ‘profile’ of the user whereas in other cases, users thought that recommender systems made too simplifying deductions or misinterpreted the taste totally. The attitude towards recommendations was also shaped by how users perceived themselves as discoverers of music. Furthermore, it turned out that music recommender systems have its biases and affordances – for better or worse. The recommender systems were mostly given a great deal of autonomy which blurred the perception of who or what is actually acting.

Keywords: music recommender systems, taste, relevance, agency, software, algorithms

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1 INTRODUCTION

1.1 Framing the topic

Software has indeed become an essential part of how contemporary societies function and how cultural artifacts are circulated. Due to advancements in technology in the last decades, a significant amount of our everyday life activities is now mediated by these various applications (Kitchin & Dodge, 2011, p. 3). We use credit cards to manage transactions both in the physical world and on the internet, social media applications to interact with our friends, map applications to navigate in unfamiliar regions, sound and image processing programs to create and edit pictures, video or music – to name a few. Software influences what we will find when we use Google search to acquire information and frames our perception of the world through personalized social media feeds (Hern, 2017).

To put it shortly, software is ubiquitous. Thus, it would be reasonable to ask what does software ‘do’, and what is happening when we make use of it and act in cooperation with it. Software does not only provide us tools we need; it also shapes our actions and transfers our boundaries of abilities to act. Recently, researchers have shown an increased interest in the ubiquity and significance of software to our everyday life activities (e.g. Manovich, 2013; Rushkoff, 2011; Tufekci, 2011; Gillespie, 2014; Striphas, 2015). Thus, it is not enough to analyze the relationship between user and technology only as a relationship between an actor and a tool. Instead, the relationship should be problematized and it should be acknowledged that it has become more complex and intertwined than ever before.

We also use, in increasing amounts, music streaming services to consume and discover music. (IFPI, 2017). The objective of my thesis is to focus on music recommender systems that are great examples of software technology since they increasingly influence on what information we receive and perceive most relevant (Gillespie, 2014). They also represent the development in which personalization and customization of services are becoming more common. Generally speaking, a recommender system refers to an information or decision-support system that utilizes collective intelligence and big data in order to give suggestions and make predictions of what kind of content the user is willing to receive (Leino, 2014, p. 28–29, see also Ricci, Rokach & Sapira, 2011, p. 1). Due to my personal interests in music, I am to study how people discover music online with the help of these systems. In terms of music consumption, streaming

services like Spotify, Apple Music, Deezer or Google Play are examples of applications utilize the mechanics of recommender systems.

Although a decent amount of research has been carried out on music recommender systems, there have been few empirical investigations on how the users actually use these systems, how they perceive and make use of the recommendations they get (e.g. Airolidi, Beraldo, Gandini, 2016, 4). In overall, these systems have been studied mostly from the technical perspective leaving a more cultural approach and user point of view often disregarded (Leino, 2014, p. 4; Cremonesi, Garzotto & Turrin, 2012). Due to this bias in research, level of knowledge about how users actually perceive and interpret recommendations is not adequate (Buder & Schwind, 2012). That being said, this thesis seeks to fill this gap in research by focusing on the user experiences instead of the systems.

1.2 Research objectives and questions

Despite the research interest in recommender systems, especially from the technical point of view, scholars have not been able to provide a unanimous definition for it (Leino, 2014, p. 7). The first definition, though, was provided by Resnick and Varian (1997, cited by Leino, 2014, p. 8) who saw recommender systems as “assisting and augmenting the natural social process” of recommending. Since that, other scholars have attempted to define recommender systems in ways that Leino (2014) has categorized as either ‘narrow or wider definition. In the narrow definition, a recommender system is seen only as generating a personalized output of recommended items for a user whereas in wider definition, systems offer a possibility for evaluating the recommendations. Thus, the wider approach puts more attention to the reciprocity of both the user and the system. (p. 9–13.)

The history of recommender systems starts from early 1990’s. The very first recommender system, Tapestry, was released in 1992 by Xerox Palo Alto Research Center which is also known by its contribution to the development of graphic user interface of computers. As an “experimental mail filtering system, its objective was to help users to manage rapidly increasing amount of email document traffic (Leino, 2014, p. 31–32). First music recommender system, Ringo, was introduced in 1994. It was ahead of its time in many ways since it was based on user ratings and user profiles – similar techniques that are common to contemporary systems.

Since 1990's, recommender systems have become common in various services, ranging from online shops to social media feeds. (Leino, 2014, p. 31–39). Recently, various mechanics of recommender systems have been applied to practically every music streaming platform. Digitalization of music consumption has caused an explosion in amount of music on internet. Thus, users require tools to manage this abundance of content (see Morris, 2015). As Barr (2013) puts it, we have shifted from era of scarcity (buying separate physical products) to era of availability in which everything is accessible whenever and wherever. While I am writing this thesis, personalized playlists have become the battlefield of streaming platforms (Flynn, 2016, p. 37).

In this thesis, however, I focus on music recommender systems and especially on how users perceive and act with them. Unlike many scholars introduced here, my objective is not to make these systems better but rather provide insight of the user point of view and raise awareness of how impactful these systems can be for their users. Thus, the primary aim is to participate in the debate of how algorithms can be seen as possessing agency and power and how algorithms influence perceptions of users in practice. Of course, it is possible that these results may have value for the developers as well as a secondary effect. Hence, here is my main research question:

- *How recommender systems shape and participate in the practices of music discovery and consumption of the users?*

The main research question addresses how recommender systems can be analyzed as shaping and participating in the music consumption based on empirical data collected in this thesis. This data consists of eight semi-structured interviews in which informants were asked to tell their opinions and experiences of various recommender systems, as well as their listening and discovery habits in general. My hypothesis is that music recommender systems open up new ways for listening and discovering music but at the same time it is possible that algorithms make several misinterpretations about the intentions of the users which may confuse them. Thus, the concepts like *taste* and *relevance* are essential in this regard. Recommender systems are also technology that most likely distort the dichotomy of the system and the user. Thus, it is important to analyze how the *agency* is constructed in the interaction between technology and user. Having said that, the main question can be further divided into more analytical questions:

1. *How music recommender systems are perceived to meet the taste of the users?*
2. *Why the recommendations are seen as relevant or irrelevant?*
3. *How agency is constituted in the collaboration between user and recommender system?*

First, my objective is to find out how algorithms interpret (and may influence) the taste of the users. Second, I am interested in how users have interpreted these recommendations and on what basis they are seen as relevant or irrelevant. Third, I will discuss how both the user and the systems can be seen as forming a mutual ‘musical agency’. These questions are lead by lines of thoughts discussed in literature review part.

The thesis is structured in six parts as follows. In the second and third chapter, I will provide a literature review of three subjects that I consider noteworthy in terms of the research objective and research questions. These include issues of softwarization and algorithmic turn, human-technology relations and changes in music industry. In the fourth chapter I introduce my methodological choices and collection of data. In order to be able to answer my research questions, I interviewed eight people by using focused interview as my data collection method. The fifth and sixth chapter is about analyzing the data; here I will present my observations and provide a summary of the findings. Chapter 5 focuses on the discovery and listening practices of the informants whereas in chapter 6, I shift the focal point to algorithmic recommendations. In the last chapter I will conclude my research and discuss its limitations and implications as well as reflect the thesis project.

2 BACKGROUND AND THEORETICAL FRAMEWORK

In this chapter, I discuss how software is becoming more and more ubiquitous and essential in how societies function and how our everyday lives are constructed. The point is to look at recommender systems, in general, in the context of the history of technology. The chapter is divided in two themes. First, my objective is to frame recommender systems as an example of what software and media scholars call as software culture or algorithmic culture (e.g. Manovich, 2013; Striphas, 2015). Second, the emergence of recommender systems is arguably an issue of human-technology relations since my objective is to compare how algorithmic recommendations differ from traditional human recommendations. Moreover, as the usage of recommender systems is essentially cooperation between a human and a machine, it is important to take a look at how the interaction and agency are constituted in this cooperation. The third chapter is then devoted to how recommender systems are applied in the context of music consumption.

2.1 Background: “We live in a software culture”

First, let us define what I mean by *software* in this thesis. Merriam-Webster dictionary¹ defines it as “something used or associated with and usually contrasted with hardware”. Software is often associated with computers and specifically computer programs. According to Rob Kitchin and Martin Dodge (2011):

“Software consists of lines of code – instructions and algorithms that, when combined and supplied with appropriate input, produce routines and programs capable of complex digital functions. Put simply, software instructs computer hardware –physical, digital circuitry – about what to do (which in turn can engender action in other machinery, such as switching on. Although code in general is hidden, invisible inside the machine, it produces visible and tangible effects in the world.” (p. 3–4).

Thus, software is something that is perceived to be in contrast with material hardware. Software is code that makes the hardware work. While software is somewhat invisible or intangible, it is able to create material effects to our lifeworld. Given the dichotomous nature of software and hardware, they resemble the way human entities are seen in Cartesian dualistic model.

¹ <https://www.merriam-webster.com/dictionary/software>

Soul/software is the brain which is the source of knowledge and instructs the body/hardware to act.

While software is intangible by definition, it produces material and perceivable effects in our lives. As I mentioned in the introduction, in today's society, software technology is everywhere. Let us think of one's typical day in the university: I have an alarm clock on my cell phone to wake me up in the morning; I read the news from the internet with my laptop; I check the real-time bus schedules with my cell phone application; I pay my bus trip with my bus card that is coded to make the transaction; and when I finally arrive at the university, I am using a word processor to write this thesis in the library while enjoying conditioned air provided by – software. All these things seem somehow natural since they have become a common infrastructure in our lifeworld. In information society, software is the contacting surface between you and the world.

Given that software is so ubiquitous in our lives, its significance should not be undermined. Software studies scholar Lev Manovich (2013, p. 2) has argued that software has been as crucial to the emergence of information society as steam or combustion engine had been for the era of industrialization. Like steam and combustion engine, software can be seen everywhere in the society providing countless applications. Today's society is so thoroughly automated that we hardly notice the existence of software until something run by it ceases to function properly. Manovich (2013, p. 1–5) also discusses what he calls “software revolution”. That is to say that software has virtually become the *interface* of our lives because we use so much of the time in cooperation with them and they mediate most of our communication and media consumption. To conclude, Manovich states that “we live in a software culture – that is, a culture where the production, distribution, and reception of most content is mediated by software” (p. 39).

Software is present in our lives in many ways. Software scholars Kitchin and Dodge (2011) have identified four forms of softwarization. *Coded objects* are the physical units that are useless in the raw. In order to work, they need *coded infrastructure* (e.g. internet or equivalent), which is used to connect these objects. A credit card is a good example of a coded object that work only within the infrastructure it is build. Furthermore, *coded processes* are the instructions or commands that make the objects work as a part of the infrastructure. In above all this are *coded assemblages*, that consist of several coded processes and infrastructures. The topic of this thesis, the recommender systems, can be seen as examples of coded assemblages. (p. 6–7).

The change from industrial society to information society has been inconceivably rapid. While information technology is being developed, production costs have decreased and the computing power of computers have increased exponentially. Hence, the ability of software to do things and process data has reached a level few would have even imagined a few decades ago. According to Computing Research Association (2003) the computing power of the computers have increased roughly 50% annually since the World War II until the beginning of 21st century. It is clear that this has dramatically impacted how data is stored and distributed. Due to this, enormous amount of data is collected and stored both in physical and electronic archives (Gillespie, 2014, p. 170). This is certainly a situation in which the concern of one's privacy becomes more important than ever before. According to Kitchin and Dodge (2011), technology has always been utilized to regulate and control people but the contemporary tools have truly forced us to ponder what is at stake. The way Edward Snowden exposed the magnitude of governmental espionage is a good example of what this new technology can be cultivated for.

Further, we have been able to develop software more complex than ever. Mechanical work or tasks are, in increasing amounts, handed over to software. Thus, it can be said that people have granted some autonomy to software since they perform various activities without humans constantly monitoring it. In extreme cases, software does things without human consent and in ways even we humans do not always understand (Slavin, 2011). The autonomy of software has raised some debate of how the agency of software should be perceived. According to Mackenzie (2006), software possesses a sort of "secondary agency" since they are not conscious or self-aware but still able to make relatively complex and autonomous decisions based on given instructions (Kitchin & Dodge, 2011, 5).

Douglas Rushkoff (2011) states that programming is the contemporary innovation that divides humanity into producers and consumers. According to him, programming is a tool for power where language, ability to write and read and printing press have been previously (p. 18–20). Alphabet and ability to read produced a society of readers and listeners and printing press produced a society of writers and readers. Digitalization and programming, in turn, have now produced a society of programmers and those who are programmed. Though publishing, writing and reading are now easy and free for most of us, if we ignore the digital divide, we still use only software that companies, corporations and their programmers provide us. Thus, a new communication technology seems to always divide the society into the big majority of users and a small group of producers (p. 19).

2.2 Theoretical perspectives

2.2.1 Algorithms – instructions for software

Software consists of *algorithms* that are detailed instructions of how the software is managed (Kitchin & Dodge, 2011, p. 3). Algorithms, in turn, consist of code language that is used to write these instructions. Algorithms are at the core of computing science since they represent the basic logic that was already present in Turing machine (Goffey, 2008, p. 16). According to Tarleton Gillespie (2014), algorithm is made of “encoded procedures for transforming input data into a desired output, based on specified calculations” (p. 167). In its simplicity, an algorithm is “a formal process or set of step-by-step procedures, often expressed mathematically” (Striphas, 2015, p. 403). Totaro and Ninno (2016), in turn, define an algorithm as a “finite sequence of instructions such that (a) starting from initial data the instructions are deterministically applied and (b) a final state is always reached in a finite number of steps” (p. 141). Despite of spectrum of definitions, we can conclude that algorithm is basically just set of logically preset steps.

Algorithms are significant because they decide on what basis and for what purposes the software works. Some scholars heavily underline this by arguing that we live in “algorithmic culture” (Striphas, 2015, p. 396; Hallinan & Striphas, 2016, p. 119). In recent decades developed societies have delegated the “sorting, classifying and hierarchizing of people, places, objects and ideas increasingly to computational processes (Striphas, 2015, p. 395). It goes without saying that technology is always meant to help people to do things more efficiently, but according to Rushkoff (2011, p. 17) the core of the change is that software and algorithms cooperate even with our cognitive decision making. An argument I want to do in this thesis is that the music recommender systems are an example of this since they make suggestions and thus implicit decisions on what kind of music the user might eventually listen. Of course, algorithms do not decide anything instead of users but they frame the content and provide affordances in which to grasp.

Software and algorithms inside them are by no means produced in “social vacuum”. First, algorithms are socially constructed like any else human made or human invented technology. They are not just lines of code out of nowhere but processes emerged within culture (Gillespie, 2014, p. 192). Second, the impact of algorithms can be seen as *recursive*; they produce new cultural knowledge to its users who further utilize it, providing new raw material for the

algorithm and the platform. In short, algorithms are both socially constructed and co-constructing social interaction (Couldry, 2012; Gillespie, 2014, p. 183, 192).

Technological inventions are often seen as neutral and that is why it is mostly forgotten that humans have developed them. Many recommender systems and algorithms are commercial and companies have had a tendency to convince consumers to trust to the neutrality of their products or platforms (Gillespie, 2014, 180; Gillespie, 2010; Gillespie, 2011). In any case, the emergence of these platforms is fueled by capitalist logic (Mager, 2012). Data that is gathered from user logs helps marketers to apply even more aggressive personalized advertising. While search algorithms have been initially developed in universities, they have been subsequently applied to serve commercial interests of information technology companies (p. 771–772). Thus, the principles of recommender systems are by no means indifferent but exceedingly political.

Logical, consistent and flow chart -minded reasoning can be seen as the core of rationality of modern western society. Totaro and Ninno (2016) note that algorithms are not only a symbol of a society that praises rationality but have a very concrete central part in it. In this regard, Kevin Slavin (2011) demonstrates in his TED Talk presentation how autonomous algorithms are able to manipulate stock market and espionage strategies. According to him, it is reasonable to ask whether we have lost the ability to control the consequences of software like that.

In order to describe ongoing changes, new media theorist Scott Lash (2007) has introduced a term he calls '*new new media ontology*'. According to David Beer (2009), this ontology seeks to describe a shift toward a society where "information becomes active in shaping lifestyles and environments". Roger Burrows (2009) has applied this idea by arguing that the significant difference is that information technologies such as software, algorithms and code are now not only mediating our realities but actively comprising them. Beer (2009) continues to elaborate this concept by suggesting that "information is not only about how we understand the world, it is also active in constructing it". (p. 987–988). Thus, the key here is to understand the active role and embeddedness of software in our lifeworld. Algorithms, especially, have this ability to shape the social and culture and so influence our everyday lives. (Beer, 2009, p. 994). If we think of the recommender systems in general, they are not only carriers of content but actively constructing, framing, valuing the information by highlighting some of the content while hiding the rest. Of course, curation is very natural and common activity for us humans but the point is that now technology participates in this activity relatively autonomously.

2.2.2 Algorithms and relevance

Given that algorithms possess power to frame content they are closely related to the concept of relevance. According to Tarleton Gillespie (2014) algorithms have an increasingly central role in choosing what information or content is considered relevant. A search engine is a showpiece of contemporary information technology that monitors user's every move on the internet and modifies its results based on this activity. For example, Google search is the most widely used source for information and Facebook is the most common social media at least in western countries. They are both verifiably personalizing their feeds or results (e.g. Cadwalladr, 2016; Brian, 2017; Wong; Levin & Solon, 2016). Thus, it is nothing but crucial to understand the power of these platforms in constructing our realities.

Gillespie (2014) identifies six dimensions of algorithms that make them political. First, algorithms make choices by deciding what is included in the index. Put differently, algorithms make some of the data 'algorithm ready' while excluding the rest. This dimension is called the *patterns of inclusion*. Second, algorithms make political decisions as they try to anticipate the preferences of users, for instance, when a music recommender system highlights music base on the user activity (that is, previously played songs). Gillespie refers to this as the *cycles of anticipation*. Third, algorithms practice the *evaluation of relevance* based on certain criteria which, in turn, are always more or less political choices. (p. 179) The question of relevance is interesting especially in the context of musical content as I will discuss in the next chapter.

Fourth, Gillespie speaks about what he describes the *promise of algorithmic objectivity*. According to him, "more than mere tools, algorithms are also stabilizers of trust, practical and symbolic assurances that their evaluations are fair and accurate, free from subjectivity, error, or attempted influence". (p. 179). This dimension connects with the idea that technological inventions are seen as somewhat neutral although humans have developed them and are using them based on certain interests. Fifth dimension is the *entanglement with practice* which is about "how users reshape their practices to suit the algorithms they depend on". In other words, this dimension underlines the bidirectional process of influence between these systems and their users. Sixth, algorithms *produce calculated publics*, thus having a bias to put users to filter bubbles (Pariser, 2011). That is to say that algorithms invite users to belong to certain groups and these invitations are political since they can contain certain ideologies or be simply poor.

All this is connected with the concept of *big data*. New York Times declared a few years ago that we now live in the age of it (Lohr, 2012). Andrejevic, Hearn and Kennedy (2015) argue that it is reasonable to claim that we “witnessing a quantitative revolution” given that during the past few years, the total amount of produced data had surpassed the amount recorded before that in the whole history of mankind. This is possible because of two new methods of managing data: data mining and analytics. These new analytical methods seek to monetize and profit from this data explosion. (p. 379). For instance, practically every social media platform is ostensibly free for their users but what happens in practice is that users pay the bill by providing more or less private information of themselves – often consciously but in increasing amount without true consent. Commercial platforms like social media are sorts of ‘black boxes’ which is to say that few know how they function and based on what interests. (Andrejevic et al., 2015; Gillespie, 2014; p. 182; Hallinan & Striplas, 2016, p. 118).

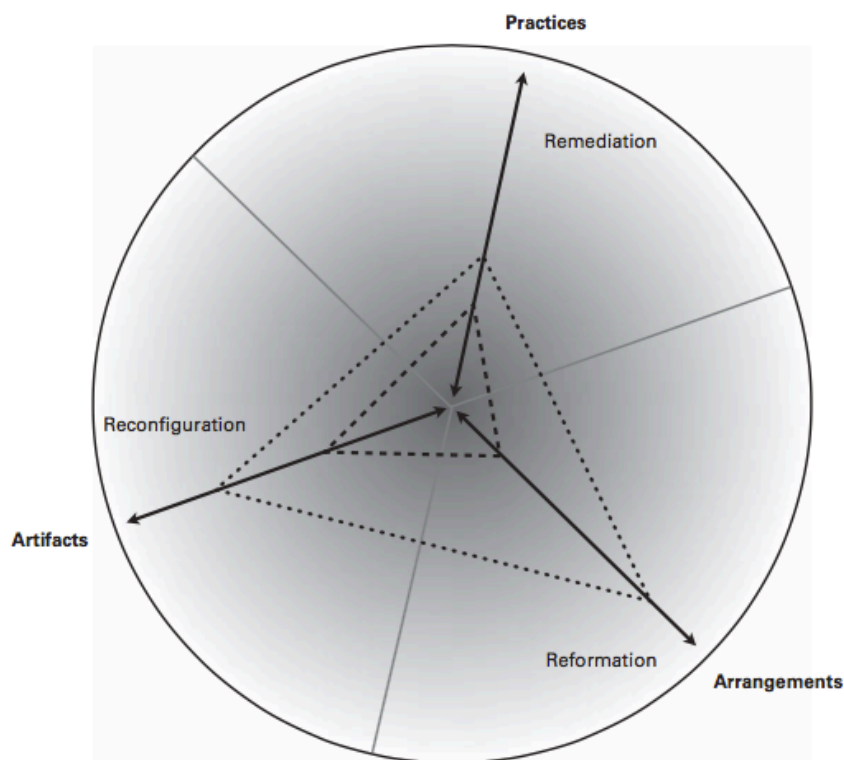
Since ubiquitous digital technology is programmed, that is, software, the contemporary state of affairs is biased toward those who are able to read and write code. Recently, there has been debate should the programming be part of curriculum in Finland. Rushkoff (2011) argues that it is short-sighted to teach people only to *use* software without paying attention to how they function in practical terms. Coding is still perceived as somewhat mechanical and straightforward action and thus not problematized. Rushkoff declares that if we do not understand the basic principles of programming, we are the ones that are programmed (p. 134–137).

2.2.3 Human-technology interactions

Second theoretical issue that I consider noteworthy in terms of my research interests is the relation between human and technology. In this chapter, I have aimed to underline how software and different information technologies make a difference in our lives but in regard to my research questions, I have to inspect more closely how we interact with them, and how the agency is constituted in those relations. An argument I want to make here is that the distinction between human and technology is not so obvious as it may seem at first glance; technological artifacts are not passive but actively shaping social action as much as social action shapes

artifacts (Lievrouw, 2014, p. 23). As a philosopher of science and technology Don Ihde (1990) puts it, “our existence is *technologically textured*” (p. 1).

In order to understand new media technologies and their users, let us take a look of what Leah Lievrouw (2014) calls the *mediation framework*. This approach seeks to resituate the materiality of technological devices and acknowledges the mutually constitutive relationship between them and users. The framework is related with Latour’s (2005) actor-network theory but it is, in my opinion, more applicable in the context of this thesis. According to her, both science and technology studies and communication studies have either focused too much on either social or technological aspects which ultimately leads to social or technological determinism. What Lievrouw proposes instead is a mediation framework which is built of three components of communication technology infrastructure and three processes of change that correspond with those components. Lievrouw defines *mediation* as “ongoing, articulated, and mutually determining relationship” among those three components and processes. (p. 44–45).



*Figure 1: Materiality and communication technology: mediation framework.
(Lievrouw, 2014, p. 46)*

Lievrouw’s framework of mediation is presented in figure 1 above. It consists of three components – material artifacts, practices and social arrangements – and three processes –

reconfiguration, remediation and reformation. First, material *artifacts* are devices and objects that “enable, extend, or constrain people’s abilities to communicate”. As technology is being further developed, artifacts are constantly *reconfigured*. Second, *Practices* or action is what users do with those artifacts. Like artifacts, practices changes over time since users invent new ways of using them. Thus, artifacts are *remediated*. Third, *social arrangements*, that is, the “patterns of relations, organizing, and institutional structure”, form in cooperation with the artifacts and practices. Social arrangements change over time in the process of *reformation*. (Lievrouw, 2014, p. 45).

As already noted, every component and its correspondent process influences the other two. Artifacts are products of their time which in turn shapes the social and cultural expectations what users can do with them. Thus, they are remediated, their meanings are purposes are renegotiated. Then, artifacts are produced, put into operation and later on reconfigured since people discover new ways of implementing them through practices. Social arrangements, in turn, adapt to the constant processes of reconfiguration and remediation. For instance, when it became relatively easy and common to share musical content for free on the internet through peer-to-peer networks, legislation and regulation of circulation of these products had to be reformed. (ibid. p. 47).

The framework of mediation is useful when studying the usage of recommender systems since it pays attention to the mutual relationship between the user and the artifacts. Users do not only take what is given but actively renegotiate the meanings and practices of communication technology they possess. Likewise, artifacts are not passive but actively reshaping social action. For instance, recommender systems, as artifacts, can be seen as agents that frame content, making some forms of practices more favorable than others. In other words, artifacts provide certain affordances.

In order to apply the framework of mediation to the study of media and communication technology and their usage, Lievrouw (2014, p. 48) suggests that it could be merged with the theory of affordances of communication technology. The concept of *affordance* was originally introduced by perceptual psychologist James Gibson (1979) and later on elaborated by Ian Hutchby (2001) for example. Lievrouw describes affordances as “opportunities for or invitations to action that things present to actors” (Lievrouw, 2014, p. 48). According to Hutchby, affordances are “functional and relational aspects which frame, while not

determining, the possibilities for agentic action in relation to an object”. Thus, technological artifacts both are shaped by and shaping users in mutual interaction. Hutchby calls this point of view as a ‘third way’ between constructivist and realist approaches that emphasize too much either the shaping power of humans or technology (Hutchby, 2001, p. 444; Lievrouw 2014, p. 48–49). Thus, the key point here is that affordances of devices do not determine the possibilities of action but rather invite users to do things with them.

The nature of affordances can be reduced to three characteristics. First, they are *functional* as they make action possible. Second, they are *relational* as they link actors with the objects. Third, they are socially *learned* through culturally and socially adopted conventions. Further, these three characteristics can be aligned with the Lievrouw’s three processes of mediation: the functionality of an artifact is resulted by reconfiguration; relation between actors and artifacts actualizes in practices and remediation; social arrangements frame what kind of practices can be learned. (Lievrouw, 2014, p. 49). For instance, when recommender systems are reconfigured, it produces new affordances or functionalities to users. Relations between users and systems provided by affordances become manifested in new practices. Further, social arrangements (i.e. expectations and common purposes of recommender systems there are) constrain what kind of practices there are to be learned.

The possibilities of action provided by technological devices can be also analyzed by the concept of amplification and reduction. Don Ihde (1990) talks about amplifying and the reducing effects of a technology. In terms of recommender systems, it could be argued that while the algorithms *amplify* the ability to find music, it simultaneously *reduces* some elements from the experience. (p. 76–78). Still, we tend to see only the handy properties and undeniable pros of new technology and forget the potential downsides (Bakardjieva, 2005, p. 63). Douglas Rushkoff (2011) argues that the essential change brought by digital media is that even our thinking is not restricted only to our own cognitive abilities (p. 17). Thus, recommender systems can be seen as agents since they participate in the decision making of choosing what music one listens to.

In his book *Technology and the Lifeworld*, Ihde (1990) divides human-technology relations in everyday life into four categories. First, in *embodiment relations*, technology is situated between the actor and the world in a manner that s/he is actually observing the world *through* the device. Ihde uses a telescope, eyeglasses or a telephone as an example of embodied

technology. Thus, when in embodied relations with technology we do not pay attention to the technology itself and it becomes transparent. (p. 72–73, 78). Second, *hermeneutic relations* are situations in which technology is representing the world and thus needs to be interpreted. For instance, a map is a representation of the world and one has to learn how to interpret it. In this situation, the actor views the map but it is not the artefact itself rather what it represents what is viewed. (p. 80–96; Bakardjieva, 2005, p. 60).

Third, Ihde suggests *alterity relations*, in which technology is perceived as ‘quasi-other’ (p. 98). That is to say that technology is perceived as some kind of *actor* rather than object, not representing or presenting the world. Whereas in embodiment or hermeneutic relations, in which technology is either “looked through” or interpreted (e.g. map) alterity relations refer to situations in which technology is not merely an object but sort of actor. For instance, interaction with artificial intelligence in its various forms is a good example of this relation. (Bakardjieva, 2005, p. 60). Video games where one plays against AI is a concrete example of this relationship. Fourth, Ihde describes *background relations* which include situations in which actors do not intentionally pay attention to. For instance, automatic and semiautomatic technology like thermostat or air conditioning are systems that we are rarely aware of. (p. 108–112; Bakardjieva, 2005, p. 60).

Although this thesis is not methodologically phenomenological Ihde provides some useful categories by which to analyze recommender systems. Throughout the book, Ihde (1990) describes both the amplifying and reducing abilities of technology. He acknowledges it is common that we are fascinated about the magnifying dimensions of the technology while we easily forget what it simultaneously reduces: “What is revealed is what excites; what is concealed may be forgotten” (p. 78). In the next chapter, I discuss the issue of recommendation of musical content and in this context, it becomes quite interesting what recommender systems are perceived to magnify or impede.

Further, what makes recommender systems interesting is that it does not fall exclusively into any category offered by Ihde. On the one hand, recommender systems can be seen as a quasi-other, comparable to a human actor who recommends music and communicates with user, as they arguably have agency and abilities to influence them. On the other hand, recommender systems do plenitude of things in the background as they are ‘black-boxed’ commercial products. It is open to the interpretation of users, how interaction and relationship are perceived.

3 DISTRIBUTION AND RECEPTION OF MUSIC IN THE DIGITAL AGE

In this chapter, I take perhaps a slightly more practical stance toward my research interest by discussing how the development of information technology has influenced the distribution and reception of music. I argue that music recommender systems reflect what Henry Jenkins (2006a) describes as *convergence culture*. I also discuss how technological advances have, for one's part, contributed to changes in music industry and how the emergence of music recommender systems should be seen in light of that. Furthermore, I examine these systems as cultural intermediaries or rather *infomediaries*, suggested by Jeremy Wade Morris (2015).

3.1 Convergence culture

It is hardly possible to discuss the distribution of media in the digital age without mentioning *convergence*. According to Henry Jenkins (2006a) convergence is a concept that addresses technological, industrial, social and cultural changes. While the technological convergence is quite easy to notice, the social and cultural changes are more embedded in the everyday life. Convergence can refer both to multi-use media devices and to cooperation between the producer and consumer. (p. 3) Together this multi-dimensional transformation constructs what Jenkins calls convergence culture:

“Welcome to convergence culture, where old and new media collide, where grassroots and corporate media intersect, where the power of the media producer and the power of the media consumer interact in unpredictable ways” (Jenkins, 2006a, p. 259–260).

For Jenkins, convergence is a multidimensional concept that encompasses technological, regulatory, industrial, cultural and social changes (p. 3). Modern smartphones are a good example of what is technological convergence since users can do various activities provided by internet with their mobiles. In this regard, convergence refers to a process in which more and more activities that earlier needed separate devices are now merged into one little device. One can watch television, send e-mails, listen to music, edit pictures. Earlier, each of these activities demanded a specific device. Regulatory convergence, in turn, refers to the harmonization of international legislation in terms of communication for example. Industrial convergence refers to the concentration of ownership in media industry and social convergence describes situation in which people use various media simultaneously. All these dimensions are what the so called

convergence culture is comprised of but in terms of this thesis, technological, industrial and social convergences are the most relevant.

Due to convergence culture, media industries are undergoing a paradigm shift. In fact, this is a second paradigm shift in a relatively short time. In 90's there was heated discussion about digital revolution and many took for granted that eventually, the so called “new media” was to push “old media” aside. However, we know that societal changes do not take place as shifts from point A to B but incrementally – little by little. The new paradigm (in the 21st century) suggests that new media is not replacing but interacting and supplementing the old. Furthermore, convergence should be understood as a process rather than endpoint. (Jenkins, 2006a, p. 5–8).

The cooperation between producers and consumers is at the very heart of convergence culture. While in old media audience was seen as passive “spectators”, new media allows its consumers more ways to participate and contribute. According to Jenkins (2006a, p. 17) convergence culture is about “people taking media into their own hands”. He talks about ‘interactive audiences’, contemporary media consumers that are, in increasing amounts, also producers, distributors, publishers and critics. (Jenkins, 2006b, 135). New consumers are also more able to communicate with other consumers. They are no more isolated individuals but socially connected (p. 19) both explicitly and implicitly.

The cooperation also means that the definitions of producer and consumer are now under constant debate. If we think about social media, it is not truly clear, who are the producers and who are the consumers of the platform. On the one hand, data collected by companies help them to make profit and control users but on the other hand, data is a mechanism by which users change the media itself (Webster, 2014, p. 27). If we think about recommender systems, users become actually co-producers or *producers* since the mutual interaction between the systems and their users is coded inside the ‘DNA’ of the recommender system. For example, many of them have used “social tagging” which enables users to label and describe the content (Lamere, 2008). In other words, users have the ability to produce their own context and structure of music consumption (Hagen, 2015, p. 635). To recommend is to provide content based on user behavior, thus, users influence – sometimes consciously through rating systems, sometimes without knowing just by listening – what kind of content they will receive in future.

3.2 From commodity to service – changes in music industry

Music industry and music consumption has undergone enormous changes during two previous decades (Celma, 2010, p. 9). As noted before, digitalization has lowered production costs and simply made the music production easier in many ways. At the same time, digitalization has also made a lot easier to distribute music especially on the internet (Barker, 2012, p. 362). During the 21st century, music has become like water that is flowing ‘freely’, accessed whenever and wherever at least in developed countries (Kusek & Leonhard, 2005). While digitalization has had its positive effects to the industry, there have been also several challenges. Issues like copyright legislation and ownership of music have been hot debates in which protectors of music industry and consumers that download music from illegal sources have competed with each other. Illegal downloading and free peer-to-peer sharing have emerged because of increasing information transfer speeds and decreasing file sizes. Physical album sales have been decreasing rapidly in the 21st century correlating with the increasing free downloading of music from illegal sources. Then again, commercial piracy has suffered a great deal in a world in which content is not a scarce resource. (Shuker, 2013, p.18–24, 37; Cluley, 2013, p. 272; Brusila, 2007, p. 60).

Recently, music industry has found its way to fighting back illegal downloading. Starting from the mid 00's, we have seen the emergence of streaming services like Spotify, Google Play, Deezer, Apple Music, to name a few. Such services have shifted the consumption of music from an era of scarcity (buying separate physical products) to an era of availability (Barr, 2013) where ultimately all the music is in one place, always available. Kusek and Leonhard (2005, p. 2–3) predicted in 2005 that in 2015, music will flow like water as a ubiquitous resource. Streaming services are a great example – both due to its name and logic – of how this prophecy has become reality.

According to International Federation of the Phonographic Industry (IFPI, 2015a), the popularity of streaming services has increased approximately 40% only during the year 2015. The popularity of streaming services has been assisted by the fact that around one out of four considers one's mobile the most important device for listening to music. Although radio is still quite popular among elders, the youth listen to music mainly with their computers or smartphones. All in all, consumption of digital music has increased during the years 2014–2015 from 50 to 70% and streaming services have approximately covered a quarter of the revenue of

digital music (IFPI 2015b). In short, it is clear that habits of listening to music are changing rapidly from single products to cloud-based services (Liikkanen & Åman, 2015). It is also somehow symbolical that in Finland for example, streaming is now taken into account when distributing the music recording sales certifications of albums and singles (IFPI, 2014).

As already noted, industrial convergence refers to the concentration of ownership. In context of music industry, the consolidation continues to merge the small actors to bigger ones. For example, in Finland the “big three” now hold 90% of the market share (IFPI, 2015b). Spotify, one example of music streaming services that provide recommendations, is relatively independent company at the moment, but these major labels already own approximately 20% of it collectively (Digital Music News, 2014). Some see this development as a way to the world without gatekeepers while others are worried of losing the power in only few hands (Jenkins, 2006a, p. 18).

Physical products have traditionally been the primary objects of consumption of music. Most enthusiastic hobbyists have considered tapes, vinyls and CDs as items to collect (Shuker, 2010; 2013, p. 170). The activity of collecting albums and discovering new music can be seen as social activity that affords, above all, pleasure but also the power of knowledge in the form of cultural capital (see Bourdieu, 1989). It is intriguing to see what forms the collecting of albums will get as music consumption shifts more and more to immaterial content. Old formats, representing one’s era, seem to become more or less symbols of nostalgia and ‘socially conscious’ consumption (e.g. Oliphint, 2015). Sales of vinyl records, a standard format of 60’s and 70’s, has been on the increase for a few years. Similarly, compact cassettes, tapes, have become popular (IFPI 2016) – especially among certain DIY cultures. Thus, the format has become a consumer choice comparable to musical taste. In terms of this thesis, it is interesting to see to what kind of values and identifications the new format – a streaming service – is associated with.

The music format also frames how the content is contextualized. While physical music products were contextualized (and aestheticized) with cover art and packaging designs, immaterial music is more and more defined by *metadata* which helps both distributors and consumers to manage digital music (Morris, 2012, p. 851, 857). According to Kitchin and Dodge (2009), metadata attached to objects or files makes them coded objects or *codejects*. Put simply, objects are made meaningful with metadata which is a precondition for recommender systems to operate

accurately. (p. 1348; Morris, 2012, 860). Given that meanings like genre categories tied with musical content are socially produced and often colored by subjective conceptions, it is not irrelevant who controls the metadata.

3.2.1 Cultural intermediaries

Practically all the music we can explore is mediated by an *actor* of some sort. An intermediary can be a member of the family, a friend, a seller at the record store, a radio host, a music journalist, a program editor of a music festival or any other media (Shuker, 2013, p. 115). All these intermediaries recommend music in various situations either explicitly or implicitly. A well-known seller at the record store suggests explicitly new music to its regular customers. Radio host or music journalist, in turn, recommends music implicitly since these recommendations are not pointed at individuals rather than masses. That is to say that while one's friend might tell you that "you really should listen to x (since you like y)", a music journalist or festival program editor makes recommendation by bringing forward promising acts in general.

Although all the music we discover is indeed mediated by something or someone there is a specific group that needs to be addressed here. The concept of a *cultural intermediary*, introduced by French sociologist Pierre Bourdieu (1989), refers especially to occupational groups that create, for one's part, meanings for cultural products and work as a link between the products and the consumption (Negus, 2002). According to Smith Maguire and Matthews (2012) cultural intermediaries should be seen, above all, as experts or specialists that create value for cultural products. Cultural intermediaries have the ability to influence the impressions, attitudes and opinions of audiences in terms of what is valuable and desirable and what is not (p. 552). In their article, Smith Maguire and Matthews deploy the concept to stand for professional actors and institutions. These include also actors like retailers like record store sellers since they pick their products, arrange them in a certain manner to their shelves. In this sense, being an intermediary is more implicit and resembles setting an agenda by which to communicate conceptions of what is significant or valuable and what is not. (p. 557–558). Cultural intermediaries are often referred to 'gatekeepers' that filter what kind of music is distributed in the first place (Frith, 1988, p. 97).

Therefore, it is reasonable to exclude so called ‘non-professional recommenders’ from the definition of a cultural intermediary. Then, intermediaries can be analyzed from at least three perspectives. First, cultural intermediaries are involved of *framing* the goods. That is to say that intermediaries highlight some goods while concealing the rest. Highlighted goods can be products, services, ideas or behaviors that are framed as the “legitimate and worthy points of attachment to intended receivers”. Second, cultural intermediaries legitimate their authority by *expertise* that separates them from other actors involved. Third, cultural intermediaries frame, legitimize and value goods in order to make an *impact*, that is, “influence other’s estimations of goods”. These three perspectives are mutually interdependent and only analytically separable. (p. 554–559).

Furthermore, expertise can be analytically divided into two components: professional and personal. Professional expertise is gained through ‘abstract qualifications’ and cultural capital (see Bourdieu, 1989) which is cultivated to legitimize the framing of goods. Personal expertise is more based on the subjective preferences of a cultural intermediary. Still, personal is also necessarily professional since “all cultural intermediaries rely more or less on personal dispositions”. (Smith Maguire & Matthews, 2014, p. 556). This is evident, for instance, in the work of music journalists; a good critique is always spiced with subjective tastes and provocative opinions. It is interesting, though, how this dynamic of professional/objective and non-professional/subjective materializes in regard to music recommender systems that are fundamentally personalizing these goods.

Therefore, it is important to understand that institutionalized cultural intermediaries do not just reflect conceptions of what is ‘good’ or ‘bad’ but are also in a central position to construct it (Smith Maguire & Matthews, 2014, p. 559). After all, this process of sifting, valuing, organizing and categorizing of cultural content is what is called *canonization*. According to Shuker (2013), “The canon embraces value, exemplification, authority and a sense of temporal continuity” (p. 107). Then, if a piece of music is put on a pedestal, included in the canon, it means that this piece of art is valued somehow more than the rest and that it is taken as a representative of its culture. The significance of cultural intermediaries is then a matter of the process in which cultural content is managed in order to create ‘new content’ which is somewhat condensed, packaged and framed. Given that amount of music circulating on the internet increases all the time, the need for this kind of compression of cultural data and ability to find the essence becomes more focal than ever.

3.2.2 Infomediaries and music recommender systems

As noted already before, music on the internet is now consumed more and more in with services where availability is no more much of a problem but the chaos brought by the plenitude of products. Whereas previously people were recommended by each other, through “the word of mouth”, today we have so much information that we need tools to control the “information overload” (Chartron & Kembellec, 2014, p. 1) Recently, several companies have seen this as a huge marketplace. Jeremy Morris (2015) calls these companies and their systems as *infomediaries* which “organizations that monitor, mine and mediate the use of digital cultural products - - as well as audience responses to those products via social and new media technologies” (p. 447). Infomediaries are sorts of cultural intermediaries since they produce ‘new data’ out of metadata that is generated in the process of usage of cultural content. This new data can be further used for example in recommender systems. The idea of infomediaries is not then to provide a music catalogue itself but rather data of associations within the catalogue for the streaming services and eventually their users. (Morris, 2015, p. 453). Considered in terms of marketing, infomediaries can be defined as third parties that produce additional value by providing knowledge of alternatives (Kotler et al., 2009, p. 644). Marketing, in turn, has an essential role in how all cultural content is circulated (Shuker, 2013, p. 111).

It seems that the demand for infomediaries in future is increasing as the amount of data on the internet increases. The amount of data circulating is so enormous that it can be said that internet has shifted from an era of searching to an era of discovery (Kotler et al., 2009, p. 755). That is to say that when surfing the waves of big masses of data, the most useful skill is the ability to track down essentialities. Kenneth Barr (2013) argues that while streaming services provide accessibility they are more and more focused on guiding users to discover satisfying content. Morris and Powers (2015) argue that while the greatest streaming services provide similarly large catalogues the features of discovery and encountering the plethora of music become the source of differentiation (p. 12). Thus, recommender systems are sorts of librarians who are not only teaching functionalities of services (e.g. borrowing machines or search engines) but also monitoring consumed content and suggesting new content based on user activity.

The transition from an era of products to an era of services suggests that in future, more and more listeners of music discover new music with the help of these automatized recommender systems (Davidson et al., 2010, p. 293). According to Flynn (2016), personalized playlists have

become the battlefield in streaming service industry (p. 37). They are on-demand-like services that are at hand always and are capable of highly personalized recommendations. David Beer (2010) has argued that this might make discovering music “sedentary and inert process” which is to say that the music will find the user, not vice versa (p. 480). Formerly, music was recommended by human individuals or human institutions and the concept of a cultural intermediary has been traditionally seen as humane activity (Morris, 2015, p. 456). Still, Moor (2012) notes that it is time to include technological devices and other non-human actors under the concept (p. 565). However, it could be useful to reflect whether the dichotomy between human and technology or another non-human actor is still relevant. However, mediating cultural content and making recommendations is ultimately activity in which human uses technology. As much as DJ utilizes sound systems to provide music for the audience software developer exploits algorithms to make the application to recommend music to users.

While algorithm-based and ‘human-based’ intermediary have something in common they undeniably have their differences. According to Morris (2015) the central difference is that automatized recommender algorithms exploiting big data are able to process information far more efficiently compared to humans (p. 451). This is where Ihde’s (1990) concepts of amplification and reduction become evident. It can be hypothesized that recommender algorithms are capable of making the discovery more ‘efficient’ as they mine big data masses in a manner that no human can do. Thus, recommender systems amplify the functional aspects of discovery. On the other hand, music recommended by a machine can make users feel somewhat clinical, heartless or ‘inhuman’ since it lacks human-human interaction. Thus, recommender systems could reduce the experiential aspects of music discovery. This tension is evident as different service providers have applied different approaches in balancing in the continuum of human-technology-based recommender systems. In 2015, Spotify (2015) launched its Discover Weekly playlist which is fully automatized but for example Apple has disclosed that they still use human curation since algorithms cannot run such an “emotional task”; “You need a human touch.” (Popper, 2015).

It is also worth considering what counts as a successful recommendation. In order to satisfy users, they should be somewhat relevant which, however, is quite difficult to anticipate beforehand. According to Tarleton Gillespie (2014), there is no objective relevance since it should always be seen in relation to the situation and the actor at hand (p. 175). Automatized and autonomous recommender systems are based on algorithms created by software developers.

These algorithms should be able to anticipate the desires of users in a right way at the right time. This is anything but an easy task. It is worth noting that although algorithms act autonomously they are able to make decisions only based on instructions of developers. Thus, they are very much prone to subjectivism, errors and intentional influence (Gillespie, 2014, p. 179; Morris, 2015, p. 452). In the end, technology is biased as much as humans who create it. It would be nothing but naïve to assume that recommender systems are anything different since they are driven by commercial interests. Users' trust is then ultimately based on how developers speak of their creations. As developers call their output as 'results', 'the most popular' or 'recommended for you', they strive to frame their algorithms as neutral (Gillespie, 2014, p. 180).

Compared with human cultural intermediaries, infomediaries and recommender systems utilizing their data can shape and influence the tastes of users in different manner (Morris, 2015, p. 456). According to Gillespie (2014) traditional cultural intermediaries have exercised *editorial logic* while the infomediaries and recommendation systems practice the *algorithmic logic* (Gillespie, 2014, p. 192). The former is about using professional and personal expertise in order to curate cultural content. The objective of the editorial logic is often to 'enlighten' consumers and guide them to consume products that are considered 'right' or 'good taste'. The latter is more like consumer driven logic in which recommendations are specifically made for every user based on their activity in the service. The objective may not be to enlighten people or frame what is good or bad content but rather meet the needs of the consumers. Thus, algorithm-driven recommendations are fundamentally personalized suggestions. The algorithmic logic is more prone to face the paradox where suggestions have to be both novel and relevant simultaneously (Celma & Lamere, 2011, p. 58).

In figure 2, below, we see a fourfold table which illustrates the problem of a good recommendation. If recommendations are both familiar and irrelevant, they are considered only popular or mainstream. If recommendations are novel but irrelevant, they are perceived as random. Novelty is defined as "the opposite of the user's familiarity with the recommended items" (Celma, 2010, p. 15) Highly relevant but too familiar pieces of music, in turn, are considered too 'safe'. They provide music that users like but not excitement. Thus, in order to be a good recommendation, an algorithm should figure out what users are not familiar with but what they ought to be.

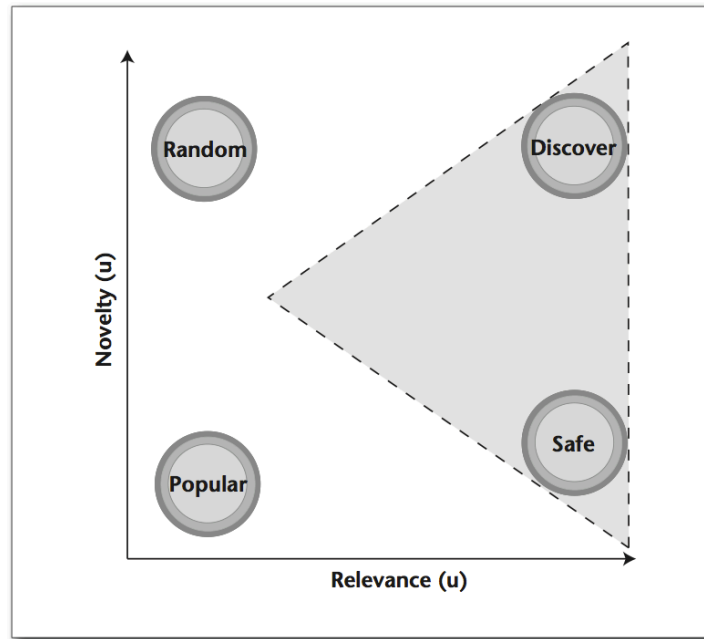


Figure 2: Novelty and relevance of recommendations. (Celma & Lamere, 2011).

Let us take an example of an infomediary. In his article *Curation by code*, Jeremy Morris (2015) examines a company called Echo Nest which monitors, mines, and mediates digital cultural artefacts and data of their usage (p. 447). In other words, it constructs new information from cultural artefacts by collecting information of their usage providing added value. This new information can be further used in end products like in Spotify and its subservices like Discover Weekly. The company (2016a) refers to itself as an “industry's leading music intelligence company” which provides deep understanding of music and data of consumers to its clients. The product of Echo Nest is an API (Application Programming Interface) which has been applied to many music services including Spotify, Rdio, Clear Channel and Rhapsody. Echo Nest also cooperates with media companies such as Twitter, MTV, BBC and with major labels (EMI, UMG, Sony) reaching over 100 million customers (Echo Nest 2016b).

3.3 What it means to listen: six positions of listening to music

Finally, before moving on to methodology and the actual analysis, let us think for a moment what listening to music is and how people talk about it. In this regard, I want to lean on lines of thoughts discussed by scholars such as Tia DeNora (2000), Mathew Flynn (2016) and Roy Shuker (2010; 2013). DeNora frames music as a cultural resource of everyday life in which

music can be chosen not only to fit the mood at hand but also to alter it (p. 16). It is noteworthy, however, that music does not ‘do’ anything on its own but the effects are constructed in interaction between it and the listener (p. 41–43). Familiar pieces of music carry memories and personal meanings that are dependent on not only the listener but the context of listening as well. That is to say that if one listens to a certain song on several occasions, the meaning constructed can be quite diverse every time.

In her book *Music in everyday life*, DeNora (2000) introduces a few studies based on interviews that illustrate how people always seem to choose music to meet certain needs (p. 48–51). Music is then an active participant, interacting with the listeners and providing affordances. Music can “get you in to the right mood” or out of the mood if desired. In my thesis, I am interested in how users address the recommender systems in this regard. How well automated algorithmic flow-like playlists are applicable to this sort of activity and how users cooperate with the system.

The second line of thought I want to address here is what Mathew Flynn (2016) discussed in his article *Accounting for Listening*. Based on empirical data, Flynn provides six listening ‘positions’ that reflect how much users put attention to what they are listening and how much control they are given in terms of what is listened to. This is important since Nowak (2016), for example, argues that there is a great significance in the “affective value” of music in terms of whether it is chosen individually or just received from environment (p. 72).

First, listening is *prescriptive* when it is practically subconscious. For example, when people listen to the radio they often do not pay too much attention to what is actually played there. Listening can bring comfort but it is not consciously observed. The ability of the user to control the flow of music is heavily limited. Second, listening is *decisive* when users engage with music somehow. In this position of listening, music can raise memories or emotions but it is still quite passively listened to. Third, listening is *impactive* when the listener ‘wakes up’ and notices a song he/she likes or is interested in somehow. Flynn offers an example from his interviews: some users had used Shazam (a mobile device app that can be used to identify a song purely based on a short sample) to identify the song that is heard somewhere. Impactive listening is also a step towards a control of what is listened to since in this position, users can skip several songs while discovering music. In terms of skipping, unlike old analogue formats,

contemporary digital technology affords users to make quick decisions on what they want to listen. (Flynn, 2016, p. 45–48).

Fourth, Flynn suggests a position of *immersive* listening that describes a situation in which a user controls the source of music and is completely focused on it. According to Flynn’s interview data, immersive listening emerged mostly on situations in which the listener was alone or shared only with a few people. Immersive listening is also often connected with the album listening. Thus, immersive listeners concede some of the control to the creators of the music. Nonetheless, broadly speaking, an album is a playlist curated by the artist or band. Fifth, Flynn proposes a position of *narrative* listening which differs fundamentally from immersive listening. In narrative listening, users do not seek meanings from the music itself but rather from the listening situation whereas in immersive listening, the music is the essence. (p. 48–50). A good example of narrativity in playlists is a DJ who tries to maintain a suitable flow in a bar or night club. The meanings and the experience are constructed in the pre-determined sequences of pieces of music. A user of streaming service can then make his/her own playlists and thus decide what he/she listens to and in what order. When listening to algorithmic recommendation playlists, however, users concede the control of the narrativity to the system (Flynn, 2016, p. 51).

The sixth listening position, offered by Flynn, is *conversive listening*. This mode of listening reflects how users establish a mutual relationship with the recommender system. Whereas all the five previous positions of listening to music were subjective and adopted when listening to analogue formats conversive listening merges all these into a new form of listening when using streaming platforms. That is to say that apart from what position of listening a user is adopting the music offered by the system aims to conform to the taste and listening context of the user – moment by moment. Flynn notes, however, that there is a constant risk of conflict as it is not guaranteed in anyway that the “taste profiles” made of the users match with the perceptions of the users themselves. (p. 51–54). Of course, this conflict can emerge from various reasons. Even the users do not always have a realistic perception of what they actually like (p. 52).

In situations where users have control over what they choose to listen, the concept of *taste* becomes useful. Taste can be defined as the “assemblage of preferences, social connotations, material engagements with technologies, and the roles assigned to music” (Nowak, 2016, p. 125, cited by Flynn, 2016, p. 40). Taste is made of “cultural preferences”, something that is

framed by nostalgia and individual memories. Although taste is an individual thing, it is constructed and maintained socially (Shuker, 2010, p. 83–84, 107). The issue of taste has already been discussed in terms of how cultural intermediaries influence it and try to construct “a good taste”. Taste is also connected with different dichotomies such as “mass versus community/local; commerce versus creativity; manufactured versus authentic; major record companies versus independents” (Shuker, 2001, p. 8; 2013, p. 97–98).

Furthermore, it has to be noted that taste is also a concept that changes over time and has a socio-economic dimension. For sociologist Pierre Bourdieu (1984), ‘the right’ taste was something that was controlled by those with high cultural capital. (p. 41). So, while speech about music is often related to emotions and affects or contexts (see DeNora 2000), it is also about positioning oneself in terms of good or bad taste. Traditionally, and in western countries, it has been divided into so called ‘high’ and ‘low’ culture (Brusila, 2007, 62–63; Shuker, 2001, p. 17). In this division, popular music has been seen as ‘low’ culture whereas western classical music has been considered as ‘high’. All in all, high culture has been something that elite has used to distinct from the masses. Contemporary research, starting from 1990’s suggests, however, that such distinction of high and low culture) is no longer applicable in today’s society. Instead of narrowly defined high culture, ‘good taste’ can be described more as *cultural omnivorosity* rather than snobbism. That is to say that varied taste of music is a sign of awareness whereas the narrow or restricted taste of music is perceived as somehow uncivilized or ‘bad taste’. (Purhonen et al., 2014).

Hence, the argument I want to make here is that Flynn’s (2016) line of thought, combined with the ideas of Ihde (1990) and Lievrouw (2014) about the relationship and interaction with technology, suggests a new way to think of what listening to music is in contemporary digital environments. The formation and constant reformation of taste and practices is powered by the interaction with these autonomous systems. Thus, it is not only the (deliberately chosen) music that is an active participant in constructing the mood (DeNora, 2000) but the whole recommender system that participates in the action. This new way of listening to music is also reflecting the convergence culture (Jenkins, 2006a) as it becomes blurred who is the user and who is the provider. By Ihde’s (1990) terms, music recommender systems are not only embodied or hermeneutic objects – for instance representing an editorial cultural intermediary – but rather essential actors, quasi-others, that can be played with or against in the pursue of discovery.

4 METHODOLOGY AND DATA

This chapter includes the methodological choices of this thesis followed by the introduction of data collection and analysis methods. First, I will provide a breakdown of my methodology and discuss how the literature of the previous chapter is related to my data. Second, I will introduce my data, how it was collected and how it was analyzed.

4.1 Methodological choices

Tuomi and Sarajärvi (2009) point out that concepts of method and methodology are often misunderstood as synonyms. Instead, methodology refers to the general setting of the research which includes taking a stance concerning both ontology and epistemology. Thus, methodology is not only a set of methods but also a big part of the theoretical framework. (p. 13; 19). All in all, a scholar should consider various questions that are methodological by their nature. This list is based on what was suggested by Hirsjärvi, Remes and Sajavaara (2009, p. 124):

- Research interest: how to explicitly define the research questions or research problem?
- Philosophical choices: how is the nature of reality constituted (*ontology*) and how one is able to get information of that (*epistemology*)?
- Methods: what is the best way to collect the material and to analyze it (in terms of research questions)?
- Theoretical framework: how theories are related to the material?

In general, research interests, problems and questions should be formulated and considered carefully before making the actual collection of data. In qualitative research, however, this is not always a reasonable way to proceed. One has to be aware that the research interest or problem can change during the research process. Thus, it is probably better to use the concept of a research ‘task’ rather than a ‘problem’. (Hirsjärvi et al. 2009, p. 125–126). During the research process, I used preliminary research questions in order to build my interview frame but the final research interest and questions were formulated not until the analysis phase.

As for the philosophical choices, I position my thesis as hermeneutic, descriptive and inductive approach that considers reality as socially constructed (e.g. Alasuutari, 2011, p. 24) and fluid

(Saukko 2003, p. 25). Thus, in ontological sense, social constructionism is about acknowledging that there are multiple truths and realities about the world. In epistemological sense, people are the primary source of information and meaning. Based on Saukko's (2003) division of methodologies, I am focusing on the hermeneutic approach since I am mostly interested in the lived realities of the informants (p. 19). In addition to what the informants say, I am also interested in how things are said. Thus, I plan to use a combination of hermeneutic and deconstructive approaches which Saukko (2003, p. 28) defines as prismatic method.

Third issue is the relation of theoretical framework to the data. According to Eskola (2015, p. 188–189) research can be either theory-driven, theory-related or data-driven. Theory-driven research refers to a setting in which data analysis is based on existing theory whereas in data-driven analysis the data is the primary source of interpretations. In the middle of these approaches is the theory-related research in which analysis is not strictly based but still connected to the theoretical framework (Tuomi & Sarajärvi, 2009, p. 96–97). Since I am interested in the individual experiences of the users and there is some research about that, I would like to pick the theory-related approach. The advantage of this choice is that I can use my literature review in order to build an interview frame but the actual analysis is more focused on what is in the data. To put it in other words, the idea is not to 'test' certain theories in the analysis but rather open up new points of view. This, in turn, is desirable in this case since the topic is under-researched.

4.1.1 Qualitative research

Qualitative research is often seen as the opposite of quantitative research although Alasuutari (2011, p. 32) prefers to see these two more like the ends of continuum rather than a dichotomy. To put it roughly, however, in qualitative research 'the reality' is perceived to be dynamic and diverse with multiple meanings and 'truths' whereas in quantitative research reality is seen as measurable, static and objective (Hakala, 2015, p. 21–22). Qualitative research does not aim for statistical generalizations like quantitative research. Instead, the qualitative approach seeks to describe, understand and, most importantly, interpret a certain phenomenon from a certain point of view (Tuomi & Sarajärvi, 2009, p. 85).

Margrit Schreier (2012) has suggested several features that characterize qualitative research. I will not go through all of them but the ones I considered the most relevant. First, it is *interpretive*. That is to say that researchers utilizing qualitative methods accept that there are multiple meanings, interpretations and 'truths' about world. These conceptions vary depending on who is asked and when or where one is asked. Second, and as a result of that, qualitative research is also *situational* in a sense that interpretations and meanings are profoundly context-related. Third, qualitative research is *reflexive*, which means that qualitative knowledge is always subjective since the informants can react in various ways depending on the context. A reflexive researcher does justice to the informants and acknowledges its position as co-producer of the material. This is evident especially in situations with direct interaction such as interview. Fourth, qualitative research is a *flexible* approach because it allows a researcher to reformulate one's research questions during the data collection and data analysis. This is not usual in quantitative research. Fifth, qualitative research is *inductive* which is to say that it is always at least partly data-driven. Sixth, qualitative research *emphasizes validity* over objectivity and reliability by rejecting the idea of repeatability. This connects with the idea that qualitative research is always interpretive and situational. That is, the results of the research always depend on the researcher to some extent. (p. 20–28).

4.1.2 Focused interview

In general, the pros of the interview are that the researcher is able to emphasize the role of the informant as subject that creates meanings. Direct interaction with the informants also enables the researcher to be flexible (Hirsjärvi et al. 2009, p. 204), clarifying the questions and making specifying questions when necessary. Interview is a good option if the complexity of the topic is known beforehand. Cons of the interview are, in turn, that the researcher has to be fully aware of its position as a co-producer of knowledge. The scholar has to be cautious not to lead interviewees give so called "socially acceptable answers". (Hirsjärvi & Hurme, 2008, p. 35, 101). For example, the interview questions should not be leading to answers the researcher anticipates getting. This is common especially when an interviewee feels uncertain about his/her answers (Ruusuvuori & Tiittula, 2005, p. 30). This is something that I had to be very careful with since I had already gathered theories about the topic before collecting the data.

Research interviews can be roughly divided into structured and unstructured interviews (Hirsjärvi & Hurme, 2008, p. 45–46). The most structured form of interview is a survey in which all questions are exactly the same for all informants. In most cases, the ways how informants can answer the questions are also limited. Unstructured interviews, in turn, do not have preset of questions. Instead, the discussion is mostly lead by the informant. They are also called 'in-depth' interviews since the informants are often carefully chosen. Between structured and unstructured interview is *focused interview*, a method which is based on predetermined themes (p. 47). In this setting, the researcher does not go through the same questions for every informant but guide the discussion according to broader themes. The questions are similar but they can be reformulated in the interview situation depending on what is relevant. As in unstructured interviews, in focused interviews the informants are able to answer the questions informally. In that sense, focused interview appears to be more like an informal conversation but it is still based on some presets, often emerging from the theoretical framework. (Ruusuvuori & Tiittula, 2005a, p. 11; Tuomi & Sarajärvi, 2009, p. 75).

The motivation for utilizing focused interview as my data collection method is that it connects well with the idea of the theory-related approach. I was able to sketch the themes for the interview with the help of my literature. At the same time, focused interview emphasizes the role of the informants since the questions are 'open' and the answers can lead the discussion to unanticipated topics that can be valuable. This was something that happened regularly when collecting the data. Predetermined themes help to organize the interview but they also allow the researcher to go more in detail with themes that seem to be the most relevant with certain informants. Eskola and Vastamäki (2015) have suggested that the interview frame could contain several levels. On the top level, there are broad themes and topics that guide the discussion in general. On the second level, there are more specified questions that cut the theme into smaller subtopics. On the third level, there are detailed questions that should not be used unless the interviewee did not answer properly during the first two levels. The advantage of using such levels is that the researcher can adjust the interviews according to how much the informants are willing to tell spontaneously. (p. 37–38).

Focused interviews can be conducted by discussing with the informants one at a time, in pairs or in groups. Again, this depends on how the research interest in formulated. (Hirsjärvi & Hurme. 2008, p. 61). In the big picture, I see recommender systems as the product of individualization. The recommendations provided by these algorithms are highly personalized

due to their logic (Gillespie, 2014) so it makes sense to treat the informants in similar manner – as individuals. Group discussion also has its general disadvantages as group chemistry or dynamic comes into play (Hirsjärvi & Hurme, 2008, p. 63); it is possible that some of the interviewees talk all the time while the others are more uncertain to disclose their experiences.

4.2 Data collection

The data used in this thesis consists of eight interviews that were conducted in October of 2017. In order to find informants, I published a Facebook post in September of 2017 in which I described the general topic of my thesis and inquired for potential volunteers to be interviewed. The post was published in two groups – in Music Studies of University of Tampere and Music scholars of Finland – and in my own page. I also encouraged my social network to share the post forward. In this post, I told that the only requirement to be eligible for the interview was that one would be interested in the topic and willing to share one's experiences in relation to it. Thus, the interviewees were not based on any specific reference group but rather on the replies I got. Unfortunately, I forgot to announce in the post that I cannot nor want to interview people that I am familiar with. Due to that I had to exclude a few volunteers I knew.

The lack of specific reference group is not an ideal situation since informants should represent some sort of group which in turn is defined by research interests. (Hirsjärvi & Hurme 2008, 60, 83). Despite this, all of the volunteers turned out to be citizens who are young adults with an academic background. This fits together well with the fact that according to the report published by Finnish National Group of IFPI and Teosto (2016), age groups of 16–25 and 26–35 use distinctly more streaming services compared with the older age groups. That being said, the reference group of the informants is young adults with academic background and interest in the topic.

Furthermore, it has to be noted that five of the interviewees, a majority, had an academic background in music studies unlike the rest of them. This is not ideal but unfortunately there was no possibility to frame the data only in people with this background. However, having an academic background in music is just one aspect that I have taken into account in my analysis. Still, it is an issue that may heavily affect the reliability of the research. A research is seen as reliable if other researchers can produce relatively similar results with relatively similar

research setting. Should this study be conducted again with more heterogenic informants, it may produce quite different results. However, as Schreirer (2012) notes, qualitative research emphasizes validity over reliability which is to say that the repeatability of research is not a big concern after all. On the other hand, the fact that most of the interviewees are musically oriented or informed can also be counted as an advantage of this research. These interviewees are, however, people who have already put attention to the topic, thus being able to reflect it more analytically.

The fact that a majority of interviewees were studying music or perceived it as a profession is something that has to be taken into account in the analysis because it is the reason why so many interviewees told how important music is in their everyday lives. For these interviewees especially, music was not only listened simply for fun or enjoyment but it was also an object of academic or professional interest. Thus, music could be listened to acquire inspiration for one's own work (of producing music), to maintain a good perception of what kind of music is produced in contemporary society or just accumulate knowledge of history of music.

The interviews were based on predetermined themes but questions within them changed a bit over time. I did not use a sample interview to test my interview frame so I had to make some minor changes after the first interview. This is in line with the idea that the analysis begins already during data collection which is discussed more in detail in the next chapter. The length of the interviews varied from 40 to over 70 minutes although the themes were the same. This was due to that every person has a different way of speaking and telling their ideas and opinions. Some of the interviewees turned out to be more capable of reflecting their ideas which was not surprising. After the interviews, I listened to the records and transcribed them carefully. Only filling words and totally irrelevant parts of discussion were marked out. The transcribe process resulted in approximately 70 pages of text which is the actual data to be analyzed.

The themes used in the interviews can be found after references at the end of the thesis. I will, however, describe them quickly here. The first theme was about the *practices of listening to music*. This theme was chosen because I wanted to know how the informants use music in their everyday life: how much do they listen, where do they listen, for what purposes, what do they like and what may have influenced their preferences? The idea was to get a basic insight of what music means for them which, in turn, was central in order to analyze how they perceive the features of recommender systems.

The second theme was about *experiences of discovering music*. This theme was chosen in order to discuss how the informants search and discover new music from a diversity of sources. The interviewees were asked their ideals of a good recommendation in terms of what do they value in music and in what circumstances. They were also asked to tell what source they use and provide examples of good or bad recommendations as well as reflect them.

The third theme was about *usage of streaming services*. This theme was chosen to find out what streaming services the informants had used since there were no restrictions in the interview invitation. The informants were asked to tell what was good or bad about them and in what situations they are used. The hypothesis was that different streaming platforms have very different properties and functionalities so they probably have a diversity of uses.

In the fourth theme, the discussion was guided closer to the core of this thesis: *the usage of music recommender systems*. The informants were first asked what kind of ‘systems’ they had used within those streaming services, how long and for what purposes. The idea of this thesis was to get concrete data of how the informants use the systems in their everyday life. Some of the interviewees had a mobile at hand so they could show some features they preferred or not. Observing was not an actual method in this thesis but it turned out that it could be used in further research.

The fifth theme was closely related with fourth one but more focused in the *interpretations and perceptions of algorithmic recommendations*. In this theme, the interviewees were asked to share their ideas about the relevance of the music they were recommended. The informants were explicitly requested to reflect the recommendations in relation to what they had told about their conceptions of a good recommendation during the second theme. They were also asked whether the algorithmic playlists had influenced their practices of listening to music in any way.

The last theme was about *the conceptions of artificial intelligence*. The interviewees were asked their prejudices and ideas of artificial intelligence in general: what might be its strengths and weaknesses. After that, the interviewees were asked to reflect the ability of AI to recommend music and compare this with so called ‘traditional’ recommenders such as cultural intermediaries discussed in literature review. The interviewees were explicitly asked to reflect what kind of differences there are between AI-driven recommendation and human curation.

These six themes stayed the same during all the interviewees but questions within them varied depending on the flow of the discussion. Some interviewees willingly shared information that I had not yet asked while others needed more explicit questions in order to be able to answer. The hierarchical interview frame, suggested by Eskola and Vastamäki (2015, p. 37–38) turned out to be useful in these situations. As usually happens, it turned out that the informants had ideas I had not expected so they were discussed more in detail. Every interview cumulated accumulated my knowledge of the topic somehow so it can be argued that the final interviews were somewhat ‘better’ than the first ones. I felt, however, that the data saturated in the end which is to say that there were no profoundly new ideas during the last interview.

4.3 Theory-related content analysis

4.3.1 Qualitative content analysis

Hirsjärvi and Hurme (2008, p. 136) suggest that one should think of options for the analysis method already during the data collection phase. One feature of using interviews is that the analysis begins already simultaneously with the data collection. This is evident especially when figuring out how many informants are needed. Several handbooks about qualitative research (e.g. Hirsjärvi & Hurme, 2008, p. 60; Tuomi & Sarajärvi, 2009, p. 87–89; Hirsjärvi, Remes & Sajavaara, 2009, p. 181–182) address the idea of saturation, a situation in which collecting new data will not produce new or relevant information in terms of the research questions. A researcher must decide during the data collection, when the material is 'saturated', that is, make interpretations. Figuring out the point of saturation is a sort of meta-analysis of the material before moving on to the actual analysis.

According to Alasuutari (2011, p. 39) qualitative analysis generally consists of two analytical phases: making observations and reducing them to groups or classes according to the chosen theoretical-methodological approach and “solving the puzzle”. The material is always treated in its entirety (ibid. 38) so the observations should be interpreted in this respect. Since focused interview is based on predetermined themes, it is common to divide the observations in similar manner, that is, by construct themes. That is to say that the researcher examines the material and looks for features that are common to several interviewees. It is natural that these analytical themes can be partly similar to what was used in interviews but in addition to that, it is possible

that new themes emerge later on. However, the essential part of the analysis is to examine how the observations are related to each other. (Hirsjärvi & Hurme, 2008, p. 173–174).

Hirsjärvi and Hurme (2008, p. 171–180) have provided several suggestions for analysing qualitative interview material but they also admit that there are few standardized methods in general, that is, analysis is always manual work to some extent. All these analysis methods fit under the concept of “content” analysis, which is simultaneously considered also as a separate method (Tuomi & Sarajärvi, 2009, p. 91). In addition to that, one could utilize discourse analysis which is also more like broad theoretical framework or mindset rather than an actual research method (Jokinen, Juhila & Suoninen, 1993b, p. 17–18). However, the difference between these two approaches – content analysis and discourse analysis – is that while the former approach is focused on what meanings there are in the texts, the latter is interested in how those meanings are produced through language (Tuomi & Sarajärvi, 2009, p. 104). In my thesis, I am more interested in the former.

Content analysis is the basic way to process qualitative data. In its simplicity, it includes four phases: inspecting the data and deciding what is interesting in it (1), scanning the data in a manner that all the details that fit into the interests of the researcher are included and everything else is excluded (2). After that, the relevant data is either divided in to categories, themes or types (3). Finally, a summary of findings is written (4). (Tuomi & Sarajärvi, 2009, p. 91–93).

4.3.2 Structure of the analysis

In the following, I will open up how the analysis was done in practice. First, the data was inspected in overall and framed based on what was thought to be interested in it in terms of the research questions and interests. The data was initially categorized based on interview themes. After that, I looked for common nominators and rearranged the data according to content-based themes. These were slightly different than the interview themes. Finally, I reflected the data in relation to my literature review and theoretical framework in order to construct analytical themes.

As a result, two analytical chapters were established. The first one (chapter 5) focuses on concepts like the taste and genre as well as relevance of the recommendations. This chapter is

more practical one and discusses things like how users listen to and discover music in practice, both with recommender systems and from other sources. The second one (chapter 6) emphasizes more the human-technology relations by providing analysis on how technology-based recommendations are perceived to differ from the human curation. Issues of agency and power of algorithms are also discussed.

All the interviews were conducted in Finnish which means that both the data and the analysis was made in Finnish. The reason for this was that both the researcher and the interviewees spoke Finnish as their native language. Since the thesis is written in English, the quotes provided in the analysis are translated into English to the best of my abilities. However, I am aware that this procedure might distort the analysis for readers who do not have Finnish as their native language. Quotes are represented in English in the text but every one of them can be found in the footnotes in the original language.

The written analysis is divided in two chapters (5 and 6). In the first chapter (5), I will analyze what the informants told about their taste, practices of listening to music and discovery practices. Hence, the focus is on how the interviewees listen to music in general, how they find music and how their taste is constructed. In the second analysis chapter (6) I focus more on the practices of using music recommender systems. The issues of relevance, biases, the nature of interaction between the user and the system and agency of algorithms are discussed. Concluding results are discussed in chapter 7.

5 MUSIC, TASTE AND PRACTICES OF LISTENING AND DISCOVERING

In this chapter, I analyze what the interviewees disclosed about their formation of taste. The idea of this chapter is to get an overview how users act as ‘musical agents’, listening and discovering music. At the core of this approach is DeNora’s (2000) idea of people who “do things with music”. Thus, this chapter serves as a background for chapter 6 in which I analyze the usage and perceptions of algorithmic recommendations. In my opinion, it is crucial to have an overview of practices of informants before focusing on the actual topic, recommender systems. The main findings were that users mostly have no genre-related but varied taste which is influenced by the plethora of intermediaries. This observation is related to what scholars have referred to as a shift from narrow taste to cultural omnivorousness (Purhonen et al., 2014). Streaming services were the primary source for listening because of their mobility. The attitude toward cultural intermediaries, however, differed based on how users perceived themselves as either independent or dependent discoverers of music.

5.1 Taste

As discussed in chapter 3.3, this analysis follows the definitions of taste provided by Nowak (2016), Shuker (2010), and Bourdieu (1984). While the taste of music constitutes of preferences, social connotations, memories and listening context, it also has a socio-economic dimension. That is to say that while speech about music is often related to emotions and affects or contexts (DeNora 2000), it is also about positioning one’s taste in relation to others. In the following quotes, we can see how these two dimensions become mixed.

In general, music had a significant role in the lives of the informants. All of the interviewees listened to music on a daily basis and with one exception, they all shared a feeling that music was an inseparable part of everyday life – whether it was about playing, analyzing or just listening to it. Music was used to fill the empty moments of everyday life for example in public transport or when doing the dishes at home. Sometimes certain music was chosen in order to get something done or to express or deal with emotions. In other words, music could be used to amplify or alter certain feelings depending on the situation (see DeNora, 2000).

"Hah, well, It means pretty much. - - Well maybe, in my case, it is not like some say that you have to always have a soundtrack on that I also like silence but yeah, I listen to a lot of music and music is quite important (14, 1²).³

"Well, it is one of the most important things, I would say. Maybe I cannot say dramatically that it means everything but yeah, it means a lot and its has always been present in my life. And will be in future as well. - - On the daily basis, I would say, rare are the days when I do not listen to anything. (15, 1)⁴

"Well, it may be the most important thing. If I start to reflect it critically, it has changed from a hobby to a subject of study, career and maybe a job at some point. Of course, the interest during free time has not gone anywhere. The amount of interest comes in phases. - - I can easily spend 12 hours a day somehow related with music. (16, 1)⁵

The quotes above represent how meaningful music is in their life. While this is not a very interesting result in itself but it is important to bring it up early. When I published an invitation for an interview, I did not specify that I want to interview people that listen to music a lot but it turned out during the data collection phase that all of the volunteers share this idea. Thus, it had to be taken into account when analyzing the data. Should I have interviewed users who related somewhat 'casually' to music, I would probably have had quite different results. Since a majority of informants addressed the importance of music in their life, their expectations and attitudes towards automated recommender systems can vary from more casual listeners.

To put it shortly, all of the interviewees shared a varied taste of music. This became evident as informants talked about how they chose music based on the current situation or feeling. Taste of music was then not based on genre preferences but rather specific elements such as distinctive snare sound, pleasing bass lines or great lyrics that put one to think. For many interviewees, a certain element was perceived as important if it resonated with their personal

² Letter 'I' and a number stands for the number of the interviewee, and the latter number is the page number in my notes.

³ "Heh, kyllä se aika paljon merkitsee. - - Ei se nyt sellain mikään etku jotkut sanoo et jatkuvasti pitää olla joku soundtrack päällä ku elää et kyllä mä tykkään hiljaisuudestakin mutta kyllä mä tosi paljon kuuntelen musiikkia ja musiikki on aika tärkeä."

⁴ "No kyl se aikalaila on semmonen yks tärkeimmistä asioista et en mä nyt ehkä voi sanoa että kaikki tälleen dramaattisesti mutta kyl se tosi paljon merkitsee että aina ollu jollain tavalla elämässä. Ja tulee varmasti jatkossakin olemaan. - - Kyl ihan päivittäin sanoisin että harvemmin tulee semmosia päiviä ettei kuuntele mitään..."

⁵ "No se merkitsee ehkä suurinta osaa siitä et ku sit ku sitä alkaa kriittisesti tarkastella ni harrastuksista tuli opiskelu, ura ja ehkä toivottavasti työkin sit jossain vaiheessa. Et se harrastus ei tietenkään itse oo hävinny mihinkään. Aika semmosia vaiheita siinä on ollu että kuinka paljon kiinnostaa. - - Helposti menee 12 tuntia musiikkiaiheisesti päivässä."

life. Playing an instrument or singing as a hobby or a profession made users pay attention to those elements. These notions reflect what Tia DeNora has discussed in her book *Music in everyday life* (2000). Furthermore, this seemingly varied taste can be seen as reflection of what Purhonen and others (2014) refer as *cultural omnivorousness*. The idea of the concept is that while previously people would communicate their ‘good taste’ by having a narrow range of favorites, today is more preferable to be a “cultural omnivore” that is interested in various music and elements. Whereas narrow taste was once a sign of awareness, nowadays it has a negative connotation and may represent narrow mindedness.

”Well I know this is a cliché when I say that I listen to all sorts of music.” (I7, 5)

“Somehow I tend to listen to a lot of funk and stoner-rock and sort of psychedelic rock and then some jazzy styles and everything good stuff. It does not have to be anything super talented, it is not a criterion but it has to sound cool. I play bass at the moment so that is why I put attention to them a lot.” (I4, 2)

“The melody is very important, the instrumental is always important. It has to be something that I can catch and understand with my nonexistent sense of rhythm and melody so I can get it. For example, jazz is way too difficult, I feel like my brain gets messed up when I try to listen to it.” (I8, 1–2).

Well, at the moment I listen to Finnish rap a lot - - but this is just a phase I am having at the moment, I always dive deep in to some scene and then I get bored of it.” (I6, 2).⁶

Given that all of the interviewees had a varied taste, it becomes difficult to determine what they actually like – not to mention why or in what situations. The last quote illustrates how listening to music is always an arbitrary activity to some extent. A listener might get inspired of an element or genre and focus heavily on it for days or weeks before getting totally bored of it. Furthermore, “getting deep into some music” is not always the pursuit of enjoyment but sometimes motivated by other interests. For example, the quoted interviewee studies music and

⁶ ”No mä tiedän, tää on kauhee klisee ku mä sanon et mä kuuntelen kaikkea musaa.”

“Jotenkin funkia tulee kuunneltua aika paljon ja sitte stoneri-rokkia ja tämmöstä psykedeelistä rokkia ja semmosta vähän jatshtavampaa meininkiä ja semmosta hyvää musiikkia. Ei tarvi olla mitään semmosta kauheen erityistaidokasta et se ei oo ikinä kriteeri mut semmonen siistin kuulonen. Bassoo soitan ite tällä hetkellä ni sit bassolinjat on mitä kuuntelee paljon.”

”Se melodia on tosi tärkeä, se instrumentaali on aina tärkeä että sen pitää olla semmonen että mä saan siitä kiinni jopa tällä olemattomalla rytmi- ja melodiatajullani et mä pystyn hahmottaa.. Esimerkiks jazz on aivan liian vaikeeta, must tuntuu et aivot menee solmuun ku yrittää kuunnella ni ehkä semmosta”

”No nyt menee paljon suomirappia - - mut tää on nyt tämmönen vaihe mikä mulla on menossa et mä meen aina tosi syvälle johonki juttuun ja sit mä kyllästyn siihen.”

is then interested in it more analytically than casual listeners. Preferences change over time and often in arbitrary ways. Thus, it becomes evident that it is hard to categorize in terms of what are their preferences based on. This is something that will be discussed later on in chapter 6.

Almost all of the informants (7 out of 8) stated explicitly or implicitly that they tried to avoid 'too commercial' music or at least they did not prefer it. While it can be argued that this is a common way to communicate one's 'good taste' (Shuker, 2001, p. 8; 2013, p. 98)) it is also interesting given that streaming services and recommender systems inside them are fundamentally commercial products that are run by capitalist logic (e.g. Webster, 2014, p. 18). The fact that interviewees categorize themselves as 'non-commercial' listeners is something that is something to take into account since it means that this analysis may not reflect how the majority of users perceive these systems. After all, mainstream music is mainstream because it is listened by the majority of users.

“It varies slightly but for me but the lyrics are very important so that is why I listen to lots of music in Finnish, it is an important factor for me. Well, and then I listen pretty much to Finnish rap, it has been a genre that I have liked a long time. And maybe the most mainstream, I would say.” (I3, 2)

“There are loads of good music out there but bad music as well. Something that is made with or has an idea is usually good. So I do not prefer very commercial music.” (I4, 2).⁷

Motivation for avoiding music that is considered ‘too commercial’ can be also analyzed through the concept of authenticity. Music scholar Roy Shuker (2001, p. 8; 2013, p. 98) addresses this constant “tension between pure art and commerce” which is especially common in popular music. In the first quote above, one interviewee states how she listens to Finnish rap a lot but within that genre, she argues that the music she likes is not very mainstream. In the second quote, another interviewee talks about good and bad music and contrasts music that has some kind of ‘idea’ with commercial music. These quotes reflect the dichotomies discussed by

⁷ “Se vähän vaihtelee mutta mulle lyriikat on tosi tärkeitä ni sen takii mä kuuntelen aika paljon suomenkielistä musiikkia et se on mulle tosi semmonen tärkeä tekijä ja sitten no mä kuuntelen aika paljon suomirappia et se on ollu semmonen tosi pitkään mukana kulkenut genre ja siinä aika sellanen ei ehkä se kaikista valtavirtasin välttämättä.”

”Tosi paljon on kyllä hyvää musiikkia mutta tosi paljon myös huonoakin että semmosta yleensä mikä on tehty silleen jollakin ajatuksella ni se on yleensä ihan hyvää. Että kauheen kaupallista musaa en kyllä tykkää et siellä on aika paljon semmosta.”

Shuker: commerce/creativity and manufactured/authentic. Commercial was basically seen as a negative attribute for music, thus, declaring one's taste as a 'true listener'.

5.2 Doing things with music

Most common places for listening to music were at home and when moving from place to place. Depending on the context, music could be listened to either actively or passively in both of them. Many informants also used radio to provide a background music when doing daily activities such as doing the dishes at home. In terms of Flynn's listening positions, using background music to get you into the mood for doing something is mostly either *prescriptive*, *decisive* or *impactive*. That is to say that informants do not pay too much attention to what is playing without occasional exceptions. Music is mainly used to fill in time and the flow of the music is rarely intervened. Still, it has to be noted that contemporary listening of from streaming services is always 'conversive' since the user can easily shift from one listening positions to another. (Flynn, 2016, p. 51–54).

"Well, first thing that comes to my mind is that if I am on the move somewhere in town, I practically always listen to a music when moving from place to another. At home, in turn, it is slightly different, it is more occasional there." (I2, 1).

"And of course, when I am in the bus, when I walk in the streets of the city and when traveling, I tend to listen, it is a good way of killing time. - - Yeah, I use Deezer at home as well but it is just so handy when outdoors, it can be accessed from cell phone, I do not need any extra devices." (I4, 1).⁸

Home was also a place in which physical formats such as vinyls, CDs and tapes were sometimes put into service to establish a "more comprehensive atmosphere for listening to music". In these situations, music was listened more actively and consciously. Listening old formats were used in relaxed or social situations, for example when inviting friends to one's home. In other words, old formats were mostly listened *immersively*, in a position in which the user controls the source

⁸ "No ensimmäisenä nyt tulee mieleen et jos on liikkella jossain kaupungilla niin sit siinä paikasta toiseen siirtymisen välissä ni tulee kyl, kuuntelee musaa lähes aina. Muuten sit kotiolosuhteissa vähän eri tavalla et se on satunnaisempaa sitten sit siinä yhteydessä ehkä." (I2, 1).

"Ja sit tietysti bussissa tulee kuunneltua ja ku kaupungilla kävelee ja matkoilla, semmosena ajantappona se toimii ihan hyvin. - - Tai siis kuuntelen Deezeria tälleen kotonakin tosi paljon mutta ulkona ku on ni se on tosi kätevä, toimii puhelimesta, ei tarvi erikseen mitään laitteita." (I4, 1)

of the music and is totally focused on it Flynn, 2016, p. 49–50). When users listened to vinyls, for example, the whole album was listened without interruptions.

“Yeah, we have those LP records but is more like, you know, it is also practical but there you have the nostalgic value when you clean the record and you put it in the deck. And then you need some candles and there is the whole setup. And then there is this feeling that I want to listen to these songs just this way. Then, it is not just that it is the song from that album but the point is that it is the song from that album on Sunday morning when we make morning coffee and pancakes.” (I2, 2).

“When you think of vinyls, for example, the listening situation is usually something in which you can relax and focus on the music. It provides a more comprehensive moment of listening.” (I2, 2).⁹

In recent years, there have been signs that vinyls and tapes have started to gain popularity again (IFPI 2016). Many people interviewed in this study did, however, use these formats only rarely or never. Listening to vinyls, for example, seemed to be a luxury or special activity in which everyone did not have money, time or interest. For many, the content of music was perceived more important than the physical format it is attached to. This data, then, was not aligned with the fact that sales of old formats are rising. Furthermore, the informants did not address the case of ‘socially conscious’ (Oliphint, 2015) consumption of old formats, put against somehow ‘unethical’ streaming that does not provide for musicians so well.

”Well, not so much that I have not... I don’t know, I have no attachment for (physical) records so the music itself is the most important thing.” (I5, 3).¹⁰

⁹ ”On meillä noita LP-levyjä mutta se on enemmän semmosta niiinku, sekin on käytäntö edellä mutta se tulee se nostalgia-arvo siitä että sä puhdistat sen levyn ja sit sä laitat se soittimeen ja sitten siihen kuuluu että sulle on ne kynttilät ja siinä on se koko setuppi ja sitten se on se tunnetila et nyt mä haluun kuunnella nämä tietyt biisit tällä tietyllä tavalla ja sitten se ei oo vaan että se on se biisi siltä levyiltä vaan että se on se biisi siltä levyiltä sunnuntai-aamuna kun keitetään aamukahvit ja tehdään pannukakkuja.”

”Ku miettii jotain vinyyliä esim. ni sit se kuuntelutilanne on helposti sellanen et pystyy rauhattuu ja keskittyy siihen musiikkiin. Se tarjoa enemmän semmosen kokonaisvaltaisen kuuntelutilanteen.”

¹⁰ ”No ei oo oikeen et ku mä en oo jotenki.. mä en tiä siis mä en oo semmonen fyysisesti levyjen perään et mulle ehkä vaan se soiva materiaali on tärkein.”

“Yeah, well, I am disappointed because of my CD collection because I have noticed that I never have energy to pick anything from my shelf. I may check the shelf and there are all my familiar albums but, regardless, I play it from Spotify because most of the albums are there anyway. - - They (albums) also make a mess at home, we have this problem that the albums tend to pile up on tables so that the covers are open and then the CD’s go easily to wrong covers or they get scratched, it is frustrating.” (I7, 3).

“Nostalgically, yeah, but - - it doesn’t serve my... I want that the music reflects or constructs that specific state of mind and when listening to CD it is very limited, it is the pool that you have to use in order to work with your state of mind. That’s why I don’t use it.” (I1, 2).¹¹

All of the informants used streaming services as their primary source of music. Spotify, Youtube and Deezer were the most commonly used services. Some had tested or used services such as Apple Music, Soundcloud, Bandcamp, Grooveshark or 8tracks. Streaming services were strongly favored over 'old formats' such as vinyls, CDs and tapes due to their ease of use in everyday life. After all, nowadays the most popular services have wide catalogues and they can be accessed on demand whenever or wherever. This observation is aligned with earlier reports: according to IFPI (2015a), the popularity of streaming services had increased approximately 40% only during the year 2015. Streaming is, according to the report published by Finnish National Group of IFPI and Teosto (2016) and this data, the new mainstream among youth and young adults.

“I have tested a few of them (streaming services). CDs I listened to a while ago, or actually no so while ago. Recently, I haven’t listened to them. But vinyls, if we speak of physical products.. But mostly from streaming services.” (I2, 2).¹²

¹¹ ”Joo no mua harmittaa hirveesti mun CD-kokoelma jota mä huomaan et mä en ikinä enää jaksa kaivaa hyllystä et ku mä saatan kattoo sitä hyllyä ja siellä on ne kaikki mun tutut levyt, Cdt, mut sit mä kuitenkin soitan sen sit sieltä Spotifysta kun suurin osa niistä levyistä kuitenkin on siellä. - - Se myös sotkee, siis meillä on tää ongelma et niit levyjä kasaantuu eri pöydille avattuina ja sit ne menee vääriin kansiin tai sit ne jää sinne naarmuuntumaan ni se ärsyttää.”

”Nostalgiaitarkoituksessa, hehe, mutta - - mun mielestä ne ei palvele sitä mun... Mä haluan et se musiikki just tosiaan reflektoi tai rakentaa sitä tiettyä tunnetilaa ja cd:llä se on tosi limited se että tässä on se pooli siitä materiaalista minkä kanssa sä voit työstää sitä sun tunnetilaa eteenpäin. Sen takia mä en käytä sitä.”

¹² ”Sillain, niitä on nyt muutamaa tullu kokeiltua. CD-levyjä tossa vähän aikaa sitten, tai siitä on itse asiassa vähän pidempi aika. Nyt en oo vähään aikaan niitä. Mut sitten fyysisessä muodossa vinyylejä oikeestaan et.. Mut suurimmalta osalta suoratoistopalveluista.”

“Spotify definitely the most. Yeah, I do listen to radio as well, I would say, it depends so much but maybe 2–3 hours a week on average, quite a lot, I would say because I don’t have a car. But then again, 2–3 hours a day from Spotify as well.” (I3, 3).¹³

A few interviewees admitted that one economic factors were one reason for abandoning old formats. Not only it was easy but also much cheaper to use streaming services. Furthermore, a few interviewees stated that they had quitted downloading free music after started using Spotify or Deezer.

“I don’t have physical formats (anymore). As a teenager, I used to collect a lot of CDs, I collected American rap, gangsta-rap and I spend a lot of money to it. Then I sold it all at some point. Pretty quickly after Spotify was launched. Spotify is the only source that I use for listening, in addition to Youtube.” (I6, 3)

“Only from Spotify at the moment. I don’t actually have a CD drive, I should buy an external one. And vinyls... I don’t have time or money to invest in that. Spotify is enough for me. I used to have Apple Music at some point but it wasn’t worth the money so I have stuck with Spotify.” (I8, 2)¹⁴

It appeared that different platforms had distinguishable strengths and weaknesses. While Spotify and Deezer were most commonly used in a sort of 'basic' or 'overall' listening, other services such as Soundcloud or Bandcamp were useful for deviant purposes. Different platforms have different catalogues and modes of use. For example, Soundcloud and Bandcamp have somewhat underground and DIY-music that cannot be found in paid mainstream services such as Spotify. Furthermore, Soundcloud could be used to venturing of drifting whereas Spotify and Youtube were used if one knew what he/she wanted to listen. Youtube is also the only platform that can be used to watch music videos. Thus, the choice of the streaming platform also affords different listening positions. Soundcloud is more useful for *narrative* listening, a position in which the order and sequence of pieces of music are more essential than

¹³ ”Spotifyta ehdottomasti nykyään eniten. Kyl mä radiotaki kuuntelen varmaan sanoisin... se vaihtelee niin paljon mut ehkä semmonen keskiarvo on vaik 2-3h viikossa et näin kai ihan paljon ku ei oo autoo. Mut sitten Spotifysta mä kuuntelen myös varmaan 2-3h (päivässä).”

¹⁴ ”Fyysisiä formaatteja ei oo. Mä keräsin teini-iässä lukioiässä paljon CD-levyjä, keräsin jenkkirappia, gangsta-rappia ja käytin paljon rahaa siihen. Sit mä myin kaiken pois jossai vaiheessa. Aika nopeesti öö sen jälkeen ku Spotify tuli. Spotify on se ainut mist mä kuuntelen musiikkia, Youtuben lisäksi.”

”Siis pelkästään Spotifysta tällä hetkellä. Et mulla ei ees oo mitään CD-asemaa, mun pitäis hankkii semmonen ulkoinen asema, ja vinyylit on aivan... ei oo aikaa eikä rahaa alkaa investoimaan semmoseen. Et Spotify riittää mulle. Mulla oli jossain vaiheessa Apple Music, mut se ei ollu hintansa arvonen et mä oon pitäytyny Spotifyssa.”

the music itself (Flynn, 2016, p. 50) A Soundcloud radio station could be juxtaposed with a DJ who tries to maintain a pleasant flow of music in a night club. Mainstream services such as Spotify, in turn, can afford wider range of listening positions – from prescriptive (background music) to immersive listening.

”Maybe it’s just that I listen to quite different music from different platforms. The music that I listen from Spotify is something that I know, it’s that kind of pop, it’s something that is quite public and popular. I never go there to look for emerging stuff or underground stuff because I know that it’s the radio pop and sort of ‘surface stuff’ that’s out there. But if I go to, lets’ say, Soundcloud, I know that I can find all kinds of stuff bubbling beneath the surface, stuff that may break at some point or not.” (I1, 2–3).

”Well, obviously, from Deezer mostly, I once had a free Spotify account but it wasn’t very handy. - - From soundcloud in that case if there is some smaller act, for example a friend’s band or something that cannot be found elsewhere, but I don’t use it on regular basis.” (I4, 4)¹⁵

Different streaming services have also varied applications of recommender systems. All of the platforms seem to have so called “artist radios” – unpersonalized algorithmic playlists that use a song or an artist as the seed for building the playlist. Spotify, however, has several personalized algorithmic playlists whereas Apple Music trusts only in human-curated playlists and Deezer’s main recommender is the ‘Flow’. Soundcloud’s radios were good for venturing and discovering music user did not know about but commercial mainstream services such as Spotify, Deezer and Apple Music, partly due to their massive catalogue, were used as a library or storage from which to intentionally choose the music. This is also an example of how services afford different listening position to be applied.

As mentioned at the beginning of the chapter, music was often used to amplify already existing feelings or emotions but also as a tool for altering them. This observation is in line with DeNora’s (2000) thoughts of music as a cultural resource in everyday life that is chosen to make an impact on one’s feelings (p. 16). For example, one could use music to perform better at work

¹⁵ ”Ehkä tässä on se että mä kuuntelen aika erilaista musiikkia erilaisilla platformeilla et se on musiikki mitä mä Spotifyssa kuuntelen on sellasta mitä mä tiedän et se on sellasta poppia, se on sellasta mikä on aika julkista ja yleistä ja se on sellasta mitä mä en mee sinne etsimään mitään sellasta nousevia juttuja tai UG-juttuja koska mä tiedän että siellä on semmonen radiopoppi ja semmonen vähän ku pintatason juttu. Mut sitte taas jos mä meen esim. Soundcloudiin ni mä tiedän et sieltä löytyy kaikkea sellasta muhevaa ja muhivaa, semmosta mikä saattaa ehkä nousta jossain vaiheessa – tai sitten se ei nouse.”

”No Deezer tietysti eniten, Spotifyhyn mulla oli joskus se ilmanen tunnus mut se ei oo kauheen kätsy. - - No soundcloudista ehkä sitte jos on joku semmonen pienempi tai joku tyyliin tämmönen kaverin bändi tai joku semmonen mitä ei oo muualla ni sitten sieltä mutta en mä sitä sillai jatkuvasti käytä.”

or get comfort or courage in difficult life situations. More often, however, music was chosen to reflect the mood or context one had in that situation or in life in general. In these situations, music was often listened more actively because the listener becomes aware of one's feelings. It was common that when interviewees chose music themselves, it was due to some kind of context, whether it was about one's feelings or concrete situation such as sitting in a bus. In these situations, streaming services are useful since they *afford* (see Gibson, 1979; Hutchby, 2001; Lievrouw, 2014, p. 48) instant gratification for impulsive or *conversive* (Flynn, 2016) listening. This will be discussed more in detail in chapter 6.3.

”And then, on the other hand, I listen to music in a way that it reflects my current state (of mind), for example, if I’m driving a car, subject to what state of mind I have, I may put either radio on or then I listen to something from Soundcloud, something recommended by my sister for example, or then I pick up Spotify and find there some kind of playlist that I know that fits to it.” (I1, 1)

”Well, if I think from the listener’s point of view, it (= listening to music) is a way of getting to a certain state of mind, maybe, if I want to emphasize it I listen to music based on that.” (I2, 1)

”Yeah, it is based on emotional states and very often, either if I have a melancholic feeling, I want to listen to melancholic music or now it’s ‘get shit done’ so I have to listen to strong, powerful music. But then again, it’s possible that I get a feeling that I have to listen to a certain artist or genre or album. But yeah, I definitely won’t listen to anything just randomly.” (I8, 1)¹⁶

Choosing music is then everyday activity but since music is fundamentally mediating emotions or feeling, choosing it can carry strong meanings which, in turn, are framed by memories and the history of the listener. Subjective meanings are also connected with the concept of taste which is constructed in social interaction (Shuker, 2010, p. 83–84). In the quote below, an interviewee explains how listening to music is a way to connect with people and

¹⁶ ”Ja sitten toisaalta musiikkia mä kuuntelen silleen et se reflektoi sen hetkistä tilaa että esim. se että mä saatan jos mä ajan autoa ja riippuen siitä mielentilasta mikä mulla silloin on ni sitten mä laitan joko radion päälle tai mä kuuntelen soundcloudista jotain mun siskon suosittelmia juttuja tai sitten mä meen spotifyhyn ja otan sieltä sitten jotain semmosta listaa minkä mä tiedän et sopii siihen.”

”No jos miettii kuuntelijan näkökulmasta niin on tietty tapa jotenkin päästä semmoseen haluttuun olotilaan ehkä, joku semmonen fiilis ehkä jos haluaa korostaa esim. ni sit vähän sen mukaan kuuntelee jotain musiikkia.”

”Joo kyl se on tunnetilojen mukaan ja hyvin paljon siis joko tunnetilojen mukaan että nyt haluan, nyt on vaikka semmonen melankolinen fiilis, haluan kuunnella melankolista musiikkia tai nyt on semmonen että get shit done et nyt pitää kuunnella semmosta voimakasta musiikkia. Mut sit tulee myös semmonen fiilis että haluan kuunnella jotain tiettyä artistia tai tiettyä genreä tai tiettyä levyä... Mut kyl siinä on just se että en mä ikinä pistä soimaan ihan mitä vaan.”

especially with the artists. In these situations, the context of choosing music is anything but arbitrary.

”But then again, if I think from wider perspective, it (= listening to music) is a way of dealing with emotions and maybe find some connection to other people in a way, for example, if you have your own emotions that you feel you are lonely with, then you can usually find comfort through music since somebody else has made a song of it. That is definitely something that I have been thinking a lot, why in some difficult times in life I tend to listen to a lot of music. So sometimes it’s really casual, just to get a good feeling or killing time but sometimes it’s filled with big meanings.” (I3, 1)¹⁷

5.3 Cultural intermediaries and discovery practices

One of the questions that were explicitly asked from every interviewee was that how they would define a good recommendation. While the answers varied a lot, they all shared an idea of that the recommendation should be somehow relevant and at least distantly familiar to the receiver. Suggested by Celma and Lamere (2011), there is an interesting tension between the desire to find something simultaneously novel and relevant. If the recommendation is relevant but too popular or familiar, it is perceived as 'too safe' and if it is novel enough but irrelevant is it often considered totally random (see figure 2 in page 24). In the following quotes, interviewees explain what makes a certain artist or piece of music relevant for them.

”I lived in Turku before and there was this really good music library and it was just fun to go there to see some distantly familiar artist names and then just borrow them and discover music that way. But then again, if I think of where I knew these names, I would say that I have heard them from radio or in some discussion related to music. But maybe it’s so that they had to be somehow familiar.” (I3, 2–3)¹⁸

¹⁷ ”Mut sitten ku miettii laajemmin ni se on semmosta, tapoi käsitellä tunteita ja ehkä löytää jotain yhteyttä muihin ihmisiin tietyl taval et jos on jotain omia fiiliksiä joiden kanssa kokee että on aika yksin ni musiikin kautta voi yleensä löytää että joku muukin on tehny tästä laulun. Ni se on semmonen varmasti mitä on tosi paljon miettiny et minkä takia sit jossain vaikeemmissa elämäntilanteissa kuuntelee tosi paljon musiikkia ni se johtuu sit niistä. Et välillä se on tosi semmosta kevyttä et ihan vaan hyvän fiiliksen nostattamista ja ajan tappamista mut joskus sillä on enemmän semmosia tosi isoja merkityksiä.”

¹⁸ ”Mä oon ollu aikasemmin Turussa ni siellä oli tosi hyvä musiikkikirjasto ja onkai vieläkin ja siellä oli kiva vaan mennä sinne levyhyllylle kattoo jotain etäisesti tuttuja nimiä ja sit vaa lainata niitä ja sitä kautta löytää musiikkia. Mut sit mä mietin että mistä ne nimet on tullu mulle ni kyl ne on tullu jostain varmaan radion kautta tai jossain musiikkikeskustelussa nostanu ne. Mutta ehkä siinä on et ne on jollain tavalla tuttuja ne nimet.”

”I don’t know, maybe I search for something that is more familiar because I kind of don’t know how it (= the system) could recommend something so different, for example if I have listened to a psychedelic stoner rock it would be weird if it recommended pop from the 90’s haha. - - Nevertheless, there is an endless amount of music so I often feel that I get stuck to certain bands or songs so it’s nice that I receive something similar.” (I4, 3)

“Yeah, mostly it is related to artists or bands I already have discovered. For example, if some of them has released new music you kind of know that it’s worth checking..” (I2, 2–3)¹⁹

One thing that could be related to the confrontation of the logics of curation and personality is how users see themselves as explorers of music. These two quotes represent the differences found in the data. In the first quote below, the interviewee states that she is a relatively independent listener and explorer of music which is why she has a sceptic attitude towards journalism. In the second quote, in turn, another interviewee acknowledges that she is maybe somewhat lazy or at least poor at exploring new music. When in doubt, she often puts radio on so she does not have to choose herself.

” I consider myself as really independent searcher, I rarely care about recommendations, I’m sort of a person who listens to a certain music when I get interested in it myself. - - I usually read (critique/magazines) if I notice something that already interests me. I’m a bit skeptical when it comes to musical media since I’m in it myself, so I feel that I know my preferences and I don’t need anyone to tell me what is cool or something at the moment.” (I5, 2–3)²⁰

¹⁹ ”Emmä tiä, ehkä mä haen enemmän semmosta mikä on enemmän tuttua koska mä en tavallaan tiedä miten se vois suositella jotain niin erilaista sitten että jos on kuunnellu vaikka psykedeelistä stoner-rokkia paljon ni sitte ois se vähän outoa että kokeilepa nyt tämmöstä hehe ysäripoppia. - - Kuitenki musiikkia on ihan loputtomasti maailmassa ni monesti vähän urautuu johonki tiettyihin bändeihin tai biiseihin ni sit on kiva että tulee jotain semmosta samantyyppistä..”

“Kyl se yleensä liittyy jo valmiiks löydettyihin artisteihin tai bändeihin. Et jos joltain on tullu joku uus julkaisu ni sit tavallaan tietää et se on ehkä sen arvonen...”

²⁰ “Mä oon tosi semmonen itsenäinen etsijä että mä harvoin otan sitä tai otan mä suosituksia vastaan, mä oon vähän sellanen että mä kuuntelen sitten ku mä ite kiinnostun jostain. - - Mä luen yleensä sillon jos mä huomaan et kirjutetaan jostain mikä mua jo kiinnostaa ni sit mä luen mut et tosi... suhtaudun vähän skeptisesti kun jollain tavalla musamedia on ku on ite vähän sisällä siinä ni sitten kokee että tunnen mieltymykseni et mä en tarvii ketää muuta kertomaan et mikä on nytte siistiä tai jotain”

”And yes, I would say that big part of my listening to music is that I just encounter it. I’m pretty bad DJ of my own life so I sort of find myself in situations in which music exists. Then, I may use Shazam or something in order to identify it and then I put it into some random Spotify playlist like ‘listen to this’. In my opinion, I’m terrible at finding new music and that’s why I always have this problem when I would have to choose what to listen. I stare at the CD shelf or LP shelf or my Spotify playlists and I just can’t decide! That’s why I often just put radio on.” (HI, 1)²¹

Although there is no correlation between these two – being a poor explorer and appreciation of curation – there is something that was somehow evident in the data. In the following two subchapters, I analyze how these two mainly opposite approaches differ from each other. I will call them as dependent and independent discoverers. It has to be noted, however, that discovering something new is basically common to all of us. This distinction does not then imply that some of the informants were listening only music they already know. The idea is that the perception of one’s ability to discover new music on its own was somewhat in line with how much they gave value to the work of cultural intermediaries. This theme will be further reflected in chapter 6.5 that is concerned with the agency of algorithms but it has to be addressed here since it provides evidence of how users perceive themselves as ‘musical agents’ in overall. Algorithmic recommender systems are, however, only one possible channel for discovering music.

5.3.1 Dependent discoverers

Based on the interviewees, it turned out that friends and other socially close people in acquaintanceship were the most important recommenders of music. Friends knew the best what one liked and interacting with people was perceived as a ‘natural’ way of discovering new music. Listening to music is profoundly social activity; people go to gigs with friends, music is played together and it is listened to and discussed together. Learning one’s musical preferences is a part of learning the person itself as it is explained in the first quote below:

²¹ ”Ja kyllä iso osa mun musiikin kuuntelusta et mä vaan törmään siihen et mä oon aika huono semmonen oman elämäni DJ et kun ikään kuin löydän itseni tilanteista joissa on, sit mä ehkä käytän Shazamia tai jotain et mitäs tää on ja laitan sen johonki epämääräiseen Spotify-listaan et kuuntele tätä. Mun mielestä mä oon hirveen huono löytämään uutta musaa ja siks mulla on aina semmonen kynnys että ku pitäis valita mitä mä nyt... mä tuijotan sitä CD-hyllyä tai levyhyllyä tai niitä mun Spotify-listoja et en mä osaa päättää! Ni hirveen usein mä vaan laitan radion päälle.”

”My friends know because we have gone to gigs together and we have enjoyed certain music. My old friend, Harri, from the childhood comes to my mind, he has a damn good taste of music and - - I know that Harri knows those elements that I enjoy because he enjoys them as well.” (I1, 3)

”And know when I really think, I would say that pretty much all the music I have started to like is either from my friends or somewhere else. Maybe avantgarde or 20th century classical music are the only ones that I consider that I have found myself.” (I7, 3)

”Well, I have a few friends and a boyfriend who have listened to music I like and who know... they are the ones that I talk with about music, I can trust their opinions, if they say that ‘this is good, you might like this’ I trust them and listen to it. And then I’m amazed if it’s something that I don’t like because I’m already used to that certain people give good tips.” (I8, 6)²²

Despite what elements one liked in music, most of the interviewees thought that their friends were really good recommenders. Socially close people are trusted and they are respected as recommenders which is evident in the last quote in which the interviewee notes that she would be confused if she was recommended something she did not like at all. In second to last quote another interviewee notices that pretty much all music she has ever discovered is initially recommended in social relationships. Most of the interviewees disclosed that family, childhood and early youth have made a permanent mark on their musical preferences. Thus, it can be argued that music becomes strongly contextualized in different stages of life (see Denora, 2000). This information about context is something that algorithms cannot acquire from its users. This theme will be discussed in chapter 6 as well.

While recommendations given by friends were perceived personal and precious, some of the informants appreciated the work of experts, that is, cultural intermediaries such as radio hosts or organizers of festivals. The appreciation of cultural intermediaries was often linked with an idea that a good recommendation is not only based on personal preferences but on the idea of

²² ”Mun kaverit tietää ku me ollaan käyty yhdessä keikoilla ja me ollaan fiilistelty tiettyä musiikkia. Mulle tulee mieleen mun vanha, siis lapsesta asti oltu ystäviä Harrin kanssa ja hänellä on ihan hemmetin hyvä musiikkimaku ja - - mä tiedän että Harri tietää ne elementit joita mä fiilistelen koska hän fiilistelee niitä samoja elementtejä.”

”Ja nyt ku mä itse asiassa ajattelen ni kyllähän melkein kaikki musa on tarttunu mulle jostain, tutuilta, kavereilta tai muualta. Ehkä ainoo minkä koen että oon itte löytäny on sitte tämmönen kokeellinen avantgarde tai 1900-luvun nk. nykymusiikki tai tämmönen äänitaidetyyppinen ni se on ehkä ainoo minkä mä sanosin et okei tää ei oo tullu jostai ihmisuhteesta.”

”No mulla on muutamia ystäviä ja sit mun poikaystävä, jotka on kuunnellu sitä musiikkia mistä mä tykkään ja jotka tietää niin... ja joiden kanssa mä puhun musiikista ni heidän mielipiteisiinsä mä luotan et jos he sanoo että tää on hyvää tai tästä sä voisit tykätä ni kyl mä sit luotan siihen ja kuuntelen sit sitä. Ja sit mä oon hämmästyny jos se on sellanen et mä en tykkääkään siitä, koska mä oon tottunu siihen että tietyiltä ihmisiltä tulee hyviä vinkkejä.”

curation, that is, certifying and validating the content for the audience (Gillespie, 2014, p. 192; Bourdieu, 1984).

”It’s also common that if I find a review from a certain magazine and I’m like ’wow that sounds interesting’, then I have checked it out. So they are important, yeah.” (I1, 4)

”Well, after all, there is so much to choose and the amount of time to listen to music is quite limited so I appreciate that someone else has... well, not decided but introduced various options. It’s kind of like that chances are better if someone whose taste I appreciate or someone whose taste is similar than mine says that this is good or its has been influenced by this music, then it’s easier to choose them. - - And then I prefer that the album is not recommended directly for me.” (I3, 3, 5)²³

These quotes illustrate how the work of cultural intermediaries in creating value for the products is appreciated. Aligned with Smith Maguire’s and Matthew’s (2012) thoughts, intermediaries such as magazines or radio hosts have the ability to influence the attitudes and opinions of the audience. Unlike friends or close ones, professional cultural intermediaries possess authority based on expertise on music industry rather than expertise in knowing the ‘user’ that is provided with recommendations. In the last quote, the interviewee notes that she appreciates it if somebody has done the initial work of framing the options and if it is made by an authority that the options are not curated for her only. In other words, she values a recommendation that is not based on personalization but editorial values. If recommendations are tailored just for her, they are less prone to give her new experiences. This interviewee then also identifies the two logics – algorithmic and editorial – that Gillespie (2014) talks about. Personalized algorithm-driven recommendations might give the user what he/she likes while cultural intermediaries communicate a certain non-personal taste that tries to define what is valuable, good or bad.

²³ ”Käytän paljon myös että jos on tullu joku arvostelu jossain (lehdessä) ni sitten että vitsi että toi kuulostaa mielenkiintoiselta ni sitte mennä kurkkaamaan sen. Et kyl ne on tärkeitä.”

”Et sit ku sitä on niin paljon mistä valita ja kuitenkin kuunteluaikakin on aika rajallista niin mä pidän sitä ihan arvokkaana että joku muu on no... ei välttämättä päättäny mutta esitellyt monta vaihtoehtoa. Että vähän jotenkin niin että, no se todennäköisyys kasvaa että jos se joku henkilö jonka musiikkimakua muuten arvostan tai joka kohtaa mun oman kanssa niin sanoo et ne on hyviä tai että hänen musiikkinsa on saanu vaikutteita näistä ni sitten on tosi helppo valita ne. - - Ja sit mä tykkään siitä et se ei oo suositeltu mulle suoraan se levy.”

"I'm very pleased to a recommendation that is... I will use now a distinction, provided by music scholar Vesa Kurkela, he talks about history of publishing music divided in cathedral and stock market. - - This stock market is about publishing music that sells and that people like... it's like schlager. It has 80% familiar elements, 20% something new and it is really popular. - - And then there is this cathedral which is like so called public broadcast model which means that the idea is to civilize or educate the common people, 'here is a palette of music, you can choose from these if you are interested' and it works on different logic." (I7, 5)²⁴

The quote above reflects similar ideas already discussed. This interviewee, however, expresses academic competence by talking about two fundamentally different kinds of logics in which music can be distributed and recommended to audiences. Thus, the work of curation is valued in general but it is also divided into two logics: 'the stock market' and 'the cathedral'. In the stock market, music recommended and distributed by capitalist logic whereas in the cathedral, the recommendation of music is built around the editorial values. The latter logic is also what the interviewee prefers since she thinks that she cannot escape the stock market music because it is recommended to her in every turn. She states that the cathedral model is more professional way of recommending since it is not only based on commercial values or biased to popularity. This dichotomy between cathedral and stock market reflects also the dichotomies of commerce and authenticity, discussed already.

Radio was a good example of 'recommender system' (and a cultural intermediary) that many interviewees mentioned. Radio was seen as easy and relatively passive way to discover new music or to just listen to something that one does not hear so often. Furthermore, a radio host was appreciated for his/her knowledge on some music scene. All in all, radio was a channel to discover 'old popular songs', schlager music, to put it specifically and other genres that informants were not so familiar with. In this case, it has to be noted that most interviewees did not listen to mainstream commercial radios but public broadcasters or more marginalized channels. For example, Bassoradio is focused on rhythm music and a relatively independent channel compared to most popular ones.

²⁴ "Mä oon kauheen tyytyväinen sellaseen suositteluun mikä on semmonen... mä käytän nyt tässä musiikintutkija Vesa Kurkelan jaottelua et hän puhuu musiikin kustantamisen historiasta että on katedraali ja pörssi. - - Se pörssi on sitä että kustannetaan musaa joka myy ja josta ihmiset tykkää ja johon ihmiset... se on vähän niinku iskelmä. Siinä on 80% tuttua, 20% vähän uutta ja sit se tosi hyvin uppoaa. - - Ja sitte on tää katedraali joka on tää ns. vanha yle-malli eli toimitetaan ohjelmia ja yritetään sivistää kansaa että kaikkee olis että tässä nyt minä toimittajan tarjoilen teille tällaisen paletin jossa on kaikenlaista että nyt voitte tästä valita että kiinnostaisko mikään näistä ja ikään kuin se toimii eri logiikalla."

”Bassoradio... It serves a purpose when I don’t know anymore where to look for, then I open it. When somebody really knows and is familiar with certain scene better than me or some other scene that I don’t know.” (I6, 5)

”It (=radio) has often songs that I rarely listen to. Old schlager and stuff that you don’t usually hear. Or then some songs that are not usually even there.” (I4, 3).²⁵

While radio was mostly listened to passively in the background, if an old hit was noticed or a good song was discovered, a few interviewees told that they used Shazam to find out what the song was. In short, Shazam is a mobile device app that can be used to identify a song purely based on a short sample. Shazam was also used in clubs and different places in which the metadata of music was not available otherwise. Thus, for example radio and Shazam combined could constitute a sort of recommender system. This activity represents also how different platforms have different uses and can be combined to establish something new.

”Well, actually, there was a time I didn’t listen to it so much but now I have listened to Yle Radio 1, it’s pretty interesting at times. One night it was in the background and I was like damn, this is cool soundscape and then I use Shazam to spot them.” (I5, 6)

”Well yeah, I listen to radio a lot, I have discovered new stuff from there and it’s essentially related to Shazam, I usually spot the songs quickly. And it happens on clubs as well, if they play something good.” (I6, 5)²⁶

The combination of listening to the radio and using Shazam to discover songs can be analyzed with Lievrouw’s (2014) mediation framework. If we think of the radio and traditional practices that are related with it, Shazam provides or *affords* a whole new practice to listen to it. While radio has been a device from which music has been listened to relatively passively, Shazam provides a way to at least *remediate* it by changing the practice of listening to it from passive

²⁵ ”Bassoradio... se toimii semmosena et ku mä en ite enää tiedä mistä mä ettisin ni sitte mä avaan et se toimii semmosena ku joku oikeesti osaa, tuntee jonku skenen viel paremmin ku minä tai jonku toisen skenen ku mä ni siel on hyviä juttuja usein tulee.”

”Siel on yleensä semmosia kappaleita mitkä on vähän sellasia mitä ei yleensä kuuntele. Vanhaa iskelmää ja mitä ei yleensä kuule. Tulee semmosia kappaleita jotka ei oo kauheen usein siellä.”

²⁶ ”Joo no itse asias nyt mä oon... mä olin monta vuotta silleen et mä en kuunnellu hirveesti mitään mut nyt mä oon just kuunnellu vaik yle radio 1:stä ja siel on välillä kyllä aika mielenkiinnostaki vaikka... yks ilta mä kuuntelin silleen taustalla ja olin et vitsi täältä tulee tosi mageeta äänimaisemaa ja sit mä just käytän sitä Shazamia mil pystyy bongailleen.”

”Siis joo kuuntelen radioo, sielt radiosta on tullu kuunneltua tosi paljon tai saatua uusia hyviä juttuja ja siihen liittyy sit Shazam aika olennaisesti et aika nopeesti tulee Shazamattuu uudet biisit. Ja sitä tapahtuu myös klubeilla ku mä käyn et jos siel soi jotain hyvää.”

to more active. Over time, this new affordance could alter the social arrangements circulating around radio. In other words, Shazam has the potential to *reform* the ways of listening to the radio.

In addition to the radio, festivals and gigs were also considered as recommenders. Festivals were events which combined something familiar with potential new discoveries. For example, the same stages often introduce similar acts which provides hints of what could be interesting. Festival flyers are also good sources of discovering new artists. Gigs, in turn have often supporting acts that are somehow related to the headliner. In this sense, the context seems to be a key to finding interesting music. Festivals and gigs are also example of curated content that was discussed already.

”Actually, now when I think of it, I do discover a lot of artists just like if I’m going to festivals, from the line-up. It’s curated, of course, but for me it’s sort of nice way (to discover). So okay, I see these bands are on this stage and they have a couple of my favorites so I will check what else they have, that’s how I try to find them.” (I3, 3)

”Festivals are one example, gigs maybe another one. If I go to see a gig and they have a supporting act it might be good.” (I6, 4)²⁷

5.3.2 Independent discoverers

While cultural intermediaries were given an important part in music discovery by many, the interviewees were not unanimous. Some informants criticized these curating institutions, when asked if they use, for example, music journalism to discover new music. Music journalism was taken as too eager trying to educate audiences of what is good or valuable. In these quotes the editorial logic, suggested by Gillespie (2014), was seen moralizing, creating groundless hype and focusing too much on artists themselves rather than the music itself.

²⁷ ”Itse asias nyt ku mä mietin ni mähän löydän aika paljon artisteja ihan vaan et jos mä oon menossa festareille ni ihan siitä line-upista ni sehän on sit tietenki kuratoitua mut se on mulle aika semmonen miellyttävä tapa et okei mä nään että tolla lavalla on tälläsiä bändejä et siel on pari mun suosikkia et katon et mitä muuta siel esiintyy et sitä kautta selvitän niitä.”

”Festarit on yks, ehkä keikat on sellanen toinen et mä meen tsekkaa jotain keikkaa ja siel on joku lämppäri ja ni se voi olla hyvä.”

”But I have personally noticed that the album critiques are kind of... based on the hegemonic idea of what’s ‘good’.” (I2, 3)

”Well, at least I don’t prefer a recommendation like if some institution would say that this is cool now, I’m sort of allergic to that, like Flow Festival style, like ‘this is now cool cause we have brought them here’ and everyone is excited about it. I won’t say anyone really would think like that but it feels like hype.. I’m kind of allergic to that kind of unconditional hype, it’s always a bad recommendation.” (I5, 4)

”I don’t actually read music journalism, it’s bit of a strange field to me. I get a little annoyed quite often about them because I feel they are tendentious, narrow and moralizing and all, they sort of force-feed some aesthetics and I always feel bad about it. Just like genre-dropping, I get annoyed of it. - - It feels like the authors would want to control or dominate something or then it’s fully focused on the person which is also something that I am not interested in.” (I7, 4)²⁸

Closely related to this idea, a few interviewees noted that they appreciated recommendations that are more personal. Music in general was seen as a profoundly personal sphere of life. This observation is in line with DeNora’s (2000) idea of “music as a technology of self”. The appreciation of personality is then a sort the opposite of the appreciation of cultural intermediaries because these logics of recommendation are based on fundamentally different values. Cultural intermediaries were seen as “force-feeding certain aesthetics” while personal recommendations – received from friends or recommender systems – are motivated by one’s personal preferences. In a way, this point of view can be seen as opposite to what for example Bourdieu (1984) discuss about socially constructed ‘good’ taste since some of the users refuse to follow the socially constructed ‘good’ taste.

²⁸ ”Mut mä oon ite huomannu et ne levyarvostelut niin ne on jotenkin, nojaa siihen semmoseen vallalla olevaan, et mikä on hyvää tyyppinen.” (I2, 3)

”No mulle ainakaan ei sovi semmonen suosittelu että on joku instituutti joka sanoo että tää on nyt siistiä ja jotenki mä oon vähän allerginen semmoselle tyyliin Flow Festival että just että tää on nyt siistiä koska me ollaan tuotu tää ja kaikki on innoissaan tästä. Emmä nyt sano että kukaan oikeesti noin ajattelis mut siit tulee vähän semmonen hype... Mä oon vähän allerginen semmoselle varauksettomalle hypelle et se on aina huono suositus.” (I5, 4)

”En lue oikeestaan musiikkijournalismia, mulle se on vähän vieras kenttä. Mä aika usein vähän ärsyynnyn niistä kun mun mielestä ne on tarkoitushakusia, kapeita ja moralisoivia ja kaikennäköstä, niissä ikään kuin paukutetaan jotain estetiikkaa ja musta on se on aina jotenki harmillista. Just semmonen genre-droppailu ni mä masennun semmosesta. - - Sit tulee semmosta outoa kontrolloimisen ja hallitsemisen tunnetta joissain arvosteluissa tai tämmösissä tai sitten täysin henkilöön keskittyvää mitä mä en kans jotenki jaksa olla kiinnostunu.”

6 INTERACTING WITH ALGORITHMIC RECOMMENDATIONS

In this chapter, I shift the focus on the user perceptions of music recommender systems. The themes discussed in chapter 5 are reflected in terms of how recommender systems shape and participate in the practices of listening and discovering of music. The algorithmic recommender systems are approached as infomediaries (see Morris, 2015) or ‘new’ cultural intermediaries that seem to have their own characteristics compared with traditional intermediaries discussed in the previous chapter. In the first subchapter, I provide some overall reflections made by the informants. It was important to begin like this since, as discussed in literature review, recommender systems appear as ‘black boxes’ which means that users cannot tell how the system operates in practice (Andrejevic et al., 2015; Gillespie, 2014; p. 182; Hallinan & Striphas, 2016, p. 118).

The user perceptions of the biases and affordances that algorithm-based recommendations may have are discussed in chapter 6.2. The algorithmic formation of ‘taste profiles’ (Flynn, 2016, p. 54), nature of interaction between the user and the system are evaluated by the interviewees. In chapter 6.3, I will discuss the situation in which the agency of both the user and the systems are negotiated. These include situations in which users become aware of the logic of recommendations and react to it or start to manipulate or play with them. The agency of algorithms is discussed in overall. Finally, the nature of interaction between human user and machine recommender is addressed.

6.1 Reflecting the relevance of algorithm-based recommendations

When users listen to music from streaming services, using recommender systems, they constantly re-shape how the system appears to them and what kind of content they receive from it. In other words, users co-construct the recommender system with the developers. In that sense, recommender systems are profoundly new media that is characterized by convergence culture (Jenkins, 2006a). When I recruited interviewees for this study, I preferred people who are interested in these logics already. That is why they all had reflections on how the system works and reflection was perceived as fascinating among a majority of them.

“It would be fun if someone would tell what it’s based on. Actually, it came to my mind right now that I should check if some youtube guy had already done a “how to Deezer” video, haha.” (I4, 6)

”Well, I haven’t used Discover Weekly for a while but it has been really good. Everyone has praised it. Yeah, I would like to know how the algorithm is working in the background. I would guess that it’s like user-based, if one of your friends has listened to these and also something else and if it gets enough volume and or high value it will be recommended for me. It’s probably something like that. Do they use a sort of music/audio identifying system, I don’t know.” (I6, 3–4)

”Well actually, this is something we have been discussing a bit with my friends. We noticed some connections, a logic it could be based on. There could be as song in my recommendation playlist if my friend had listened to it several times, it was fun to share thoughts of how the mechanics behind recommendations work.” (I2, 5)²⁹

In the quotes above, a few informants express interest in the logic of recommender systems. One interviewee, in the second quote, guessed that the recommendations are 'user-based' which means that if somebody listens to certain music a lot, it will be recommended to his/her friends. This logic can be seen also in the third quote in which an interviewee tells how he had reflected these issues with his friends. Both informants (using Spotify) are right in their observations since Spotify, among many service providers, uses so called collaborative filtering (Leino, 2014, p. 55–60) in order to produce recommendations. Collaborative filtering is one feature for which reason a recommender system is a good example of convergence culture, discussed by Henry Jenkins (2006a).

All of the interviewees had noticed at least some connections or causalities between their listening behavior and received recommendations. Often, the connection appeared visible and was noticed if the recommendations were interpreted as weird or irrelevant. Some of the

²⁹ ”Hauska että siitä ois joku teksti jossakin että joku kertois että mihin se perustuu. Itse asiassa nythän kävi mielessä että pitäis kattoo että oisko joku youtube-jäbä tehny semmosen hehe, how to Deezer-video.”

”No mä en nyt ehkä hetkeen oo tässä käyttäny viikon suosituksii mut se on ollu tosi hyvä. Kaikki on kehuu sitä. Kyl mä haluisin tietää sen mitä siin taustalla on siin algoritmin taustalla. Mä veikkaan et se on semmonen user-based, jos joku sun kaveri on kuunnellu myös näitä ni sit se on kuunnellu myös jotain toista ja sit jos se on saanu tietynlaisen volyymin tai korkean arvon ni sitä suositellaan myös mulle. Siinä on varmaa jotai tollasta. Et käytetäänkö siinä jotain musiikintunnistusjärjestelmiä ni mä en tiedä.”

”No itse asias toi on semmonen asia mitä tuttavapiirin kanssa puhuttiin jonkin verran just. Huomattiin jotain yhteneväisyyksiä, et millä logiikalla se saatto toimia. Saatto tulla joku biisi sinne suosituksiin vaikka mulle joka on ollu kaverin kuunneltavana useita toistoja et sit oli hauska tavallaan jakaa sitä keskustelua siihen et mikä se suosituksen taustalla oleva mekaniikka on.”

interviewees also pondered what kind of activities are the most influential in terms of the recommendations.

”The point is that I don’t know how Spotify learns from my ’likes’, is it genre-related or...” (I1, 5)

”But otherwise I haven’t found any reasonable explanations why... Speaking of parameters, it could be related to tempo or size of bands. Things that recur. Maybe what you can notice is that okay, now we have bands that have specific size or specific tempo.” (I7, 7–8)

”But how do they (=recommendations, playlists) are formed, I have been thinking about it. And I actually noticed that all the metal music disappeared. Back when I was doing my bachelor’s there was a lot of Djent, awful stuff, I didn’t listen to it at all. They just disappeared. I don’t know whether they disappeared because I didn’t listen to them or if I listened to them less than 30 seconds. I don’t know. Maybe you have to listen to it for a while before it counts.” (I6, 6)³⁰

In these three quotes above, interviewees wonder the logic of recommendations they have got. In the first quote, the interviewee notes that she has not figured out whether the recommendations are based on likes she has made in the service or is it just about what genres she listens to. In the second quote, another interviewee had made an observation that she receives recommendations based on the tempo of the songs or size of the bands. In the third quote, an interviewee tells how he noticed when he quitted listening to metal music after a long period of doing it. Especially the two examples reflect how recommender systems carefully analyze the elements of music that is being listened to in order to produce new recommendations in future.

A few of the interviewees had presuppositions or prejudices of how the recommendations are produced. In the quote below, an interviewee tells how she was surprised how accurately the system was able to identify what she is listening. She notes that she expected that the system

³⁰ ”Ehkä sitten se, että mä en tiedä miten Spotify oppii mun tykkäyksistä että onkse genrekohtaista vai...” (I1, 5)

”Mut muuten mä en hirveesti oo löytäny semmosia järkeviä selityksiä et miks se just.. Et jotenki sillee parametrin tarkkuudella ni se vois liittyä tempoihin ehkä, tai sitten joihinkin kokoonpanojen suuruuteen. Semmosia toistuvia juttuja. Ehkä mitä sieltä voi huomata et okei että nyt on tietyn kokosia bändejä, tietyn temposta musaa.” (I7, 7-8)

”Mut mistä se muodostuu, mä mietin sitä. Ja mä huomasin itse asiassa et sieltä poistu jossain vaiheessa kaikki metalli, sillon ku oli se kandivaihe ni oli paljon Djentiä, hirveetä kuraa, mä en kuunnellu yhtään niitä. Ne katos sieltä. Mä en tiedä katosko ne siksi että mäen soittanu niitä tai sit mä en soittanu vaik tiettyyn johoki 30 sekkaan. Mä en tiedä. Et pitää kuunnella jonku verran et se lasketaan kuunteluksi.” (I6, 6)

would have recommended music more carelessly. For example, if she listened to an artist that is in the line-up of Flow Festival, a Finnish music festival, the system would recommend other music from the line-up without going in to details. The recommendations of this kind could of course be relevant to some users but like this interviewee, some may perceive it too inaccurate.

”Surprisingly well, I would say, because I thought that it would be like if I had listened to a artist from Flow Festival it would throw all the other artists from Flow to me but instead, it has managed to pick up something, I don’t know how it does it... But maybe it’s like that I have listened to melancholic electronic pop, for example, then it has been able to give something based on that and not only based on what is hyped.” (I5, 6)³¹

Although the users noticed connections between their listening behavior and received recommendations, they could only guess what the real logic behind the system was. Recommender systems are commercial ‘black boxes’, in other words, users cannot tell how the system operates in practice (Andrejevic et al., 2015; Gillespie, 2014; p. 182; Hallinan & Striphas, 2016, p. 118). These quotes illustrate, however, how algorithms in music recommender systems are not produced in “social vacuum” (Gillespie, 2014, p. 192). They are manufactured for certain interests and they are *recursive*: they monitor usage of the service and provide new recommendations based on it, forming a cycle. This recursive cycle can be also reflected in terms of Lievrouw’s (2014) mediation framework: the artifacts or recommender systems are in a constant state of change. That is, they are constantly *reconfigured*.

One of the big themes in the interviews was how the users have interpreted recommendations and valued the relevance. The most common conception was that the recommendations should be able to reflect a certain state of mind or the context of listening situation in order to be considered good. In addition to that, every user has its own preferences and perceptions of what is significant for them in music which makes it even harder for algorithms to really learn what they would like to listen. In DeNora’s (2000) words, music is a cultural resource that is chosen to meet one’s needs in time and place (p. 48–51).

³¹ ”Ehkä yllättävän hyvin koska jotenki mä ajattelin et se on semmosta että jos mä oon kuunnellu jotain Flow Festivalin artistia ni sit se heittää kaikki muut Flow’n artistit mulle mut se on mulle jopa enemmän onnistunu sillee poimimaan jotain semmosta, mä en oikein tiedä et millä se on, millä se niitä poimii... Mut ehkä se et mä oon kuunnellu vaik jotain tosi mollivoittoista elektro-poppia ni sit se on osannu heittää jotain vähän siihen suuntaan eikä vaan silleen että nyt jotenki hypetetty artisti vaan...”

"It can be just so genre-related and since I tend to listen to wide scale of music and there are often no any other connections other than how I have experienced them at some point. It's really something that influences by ways of listening. They (=songs) are related with some personal memory or general feeling which is hard to identify from there... Or speaking of topics of the songs and so on, it seems that these things are not taken into account in the playlists or the recommendations are not so relevant." (I3, 7)

"Because when I listen to Spotify and a song comes in certain category or playlist I'm just like 'this just doesn't belong here', these elements are totally wrong. It appears to be the point that I interpret it as a wrong or bad reference because of either the elements of the song are wrong or then the combination doesn't work. - - Maybe it's like that my emotional reaction is very subject to how I feel that how well the song is tied to the discussion, culture or phenomenon I'm after." (I1, 6)³²

In the first quote above, the interviewee explains how her taste of music is quite diverse and thus there are no similarities or nodes to be easily detected. Rather than similarities based on the content of the music, for her, listening to music is often characterized by memories and feelings she attaches to certain songs or albums. This interviewee was also interested in lyrics which may go under the radar of the recommender system. In the second quote, another interviewee explains how she prefers certain elements in music rather than specific genres. For her, a good recommendation is a song that has the elements she likes, in order she likes and in the right temporal and spatial context. Another interviewee, who is not quoted here, was excited for getting recommendations that she knew nothing about but she was disappointed for example because the system did not understand that she does not like instrumental music. These quotes illustrate, aligned with DeNora's (2000) thoughts, how specific needs may determine what music is desired.

In chapter 5, users told that they have a varied taste of music and that recommendations should be able to reflect a certain state of mind or context of listening situation. This was due to that

³² "Se voi olla just niin jotenkin genrekohdasta ja sit ku ite kuuntelee aika kuitenkin sit laajalla skaalalla musiikkia ja niissä ei välttämättä periaatteessa oo mitään muita yhtymäkohtia ku se et missä tilanteessa mä esim oon ite ne kokenu. Paljon semmonenkin vaikuttaa siihen mun musiikin kuunteluun. Niihin liittyy jokin personaalinen muisto tai yleisfiilis mitä on vaikea sieltä tunnistaa niin sitten se on ehkä enemmän sitä... tai vaikka niiden biisien aiheet tai jotku tälläset ni sit voi tuntuu et ei ne ehkä sieltä listoilta niin näy tai ne suositukset oo niin osuvia."

"Koska sit ku mä kuuntelen Spotifyta ja sieltä tulee joku biisi tiettyssä kategoriassa tai listassa, ja sitten mä oon sillai että ei, tää ei vaan kuulu tänne, nää elementit on ihan väärät. Se taitaa olla just siinä että sen takia mä tulkitsen sen vääränä tai huonona referenssinä että ei, koska joko ne biisin elementit on väärät tai sitten se yhdistely ei toimi. - - Ehkä siinä tulee se, että mun tunnereaktio on tosi riippuvainen siitä, että miten mä koen että se sitoo sen siihen keskusteluun tai ympäristöön tai kulttuuriin tai ehkä ilmiöön mitä mä haen sillä tunne fiiliksellä."

music was often used to boost already existing emotions. Now, if we go back to this theme by paying attention to the characteristics of algorithmic recommendations in comparison to traditional human curation. All of the interviewees shared, at least to some extent, the opinion that recommender systems often tend to lose the context of discovering or listening to music. This is only because users cannot explain to the recommender why they listened to certain type of music. Every piece of music is loaded with meanings, different meanings, depending on the listener or interpreter (e.g. DeNora, 2000; Shuker, 2010, p. 83–84). Recommender systems try to predict these meanings but often fail since system-interpreted meanings are reduced to mathematical models and probabilities.

”The point is that I cannot specify to the system what is it in the song I like about, it’s just the whole thing, either I like it in this context or not. But because I can’t specify it like, in my opinion, this reference to 70’s was not... okay I admit, this is from 70’s but it doesn’t have this feeling of how I perceive music from 70’s.” (I1, 5)

”For example, like, what is the historical meaning or topic of this song, I’m not sure if it’s possible to... or would it be emphasized if music was only chosen by computers.” (I3, 9–10)

”I mean that it doesn’t recognize the context behind it, if I have listened to Skam soundtrack it doesn’t mean that I’m interested in all of that.” (I5, 3–4)³³

The first quote illustrates the core of the problem. The user cannot communicate what it is in the artist or the song he/she likes. The logic is that you either take it or leave it. In the second quote, an interviewee explains how recommender systems analyze the tracks as a whole while she sees them as assemblages of elements and references to other music. She is frustrated because she cannot tell the system what it is in the song she likes. In the third quote, another interviewee notes that recommender systems probably do not take into account the historical

³³ ”Mähän en voi eritellä sille (järjestelmälle) että mistä mä tässä biisissä tykkään vaan et se on vaan se kokonaispaketti, mä joko tykkään siitä tässä kontekstissa tai mä en tykkää siitä tässä kontekstissa. Mutta koska mä en voi eritellä sille että onks se tää että mun mielestä tämä viittaus 70-lukuun ei ollu... et okei tää on 70-luvulta, mutta siinä ei oo sitä fiilistä, jonka mä itse henkilökohtaisesti joka itse reflektoin et kuuluu siihen 70-lukuiseen et mitä on 70-lukuinen musiikki.”

”Esimerkiks että jotenkin mikä on sen biisin vaikka historiallinen merkitys tai aihe mistä kerrotaan niin sit sellaset jutut on semmosia et en tiedä pystyykö niitä tai korostuisko ne jos musiikki ois vaan koneen valitsema tulisko sitä sitte.”

”Tai siis et se ei tunnista sitä semmosta kontekstia siellä taustalla et se että jos mä oon kuunnellu jotain Skam-musaa ni se ei tarkota sitä että mua kiinnostaa kaikki mikä jotenki menee siinä.”

meanings of songs or albums. In the last quote, an interviewee criticizes the algorithm for recommending her music from tv show *Skam* because she has sometimes listened to its playlist.

What all these cases have in common is that the recommender systems cannot figure out why music is listened to, how it is listened to and how the music is made meaningful among the users. This would not be problematic if the algorithmic playlists were not marketed as personalized recommendations that should know the users. One clue for reasons why recommender systems fail to interpret the context is the fact that users have adopted *conversive* listening position (Flynn, 2016) in which they can shift the level of their listening awareness rapidly. The system is not able to find out whether users are listening subconsciously, passively or immersively.

In many cases, the algorithms misinterpreted the activity of the users quite profoundly. These three quotes below represent how music can be listened to not only for enjoyment but for fun (ironically) or for simply being interested in a certain genre or element in music.

”One thing that annoys me is that if I have, let’s say, downloaded some *Skam* playlist and it has a lot of ‘teenage music’ and I have listened to it for other purposes, like for partying, then the system, Spotify, begins to recommend something based on that.” (15, 3)

”Lately, what’s interesting about Deezer, we used to have a weird phase in our shared apartment when we listened to a lot of Eurodance from 90’s for some reason, haha, I don’t know why, it was just a thing. So now it recommends constantly things like Manga Boys and ATC and others. It’s kind of shocking that it’s still haunting us there.” (14, 2)³⁴

”Yeah it happened when this Djent began to appear to my recommendations and at that time, it didn’t work so well in terms of what I expected from it (= the system). So unfortunately, it happened that I listened my metal from Spotify and unfortunately, I didn’t like most of it, and when the system recognizes that I have been consuming a lot of this music it just recommends more of it.” (16, 9)³⁵

³⁴ ”Mut just jotenki semmonen mua ärsyttää et jos mä oon vaik ladannu jonku *Skam*-soittolistan, siin on paljon semmosta teinimusaa ja mä oon kuunnellu sitä ihan sillee muihin tarkoituksiin ja vähän sillee semmosella bailumeiningillä ni sit se alkaa suosittelee vaik joku Spotify jotain siihen tavallaan menevää.”

”Nyt on viime aikoina se mikä tässä Deezerissa on mielenkiinnostusta että ku tässä oli semmonen ihme buumi tällä kämpillä että me kuunneltiin hirveesti 90-luvun eurodancea jostain syystä hehe, en tiiä miks, se oli joku semmonen juttu. Ni nyt se ehoittaa jatkuvasti jotain näitä Manga Boysia ja ATC:ta ja muita. Se on jotenki aika järkyttävää että se sieltä vielä kummittelee.”

³⁵ ”Joo kyl sitä tapahtu sillon ku sitä Djentiä ja sitä metallia alko valua sinne suosituksiin et se ei tavallaan palvellut mun tarkotusta sillon mihin mä sen viikon suositukset halusin et mä halusin sen palvelevan. Et valitettavasti siin kävi niin et mä kuuntelin sen metallini Spotifysta ja valitettavasti mä

In all of these examples, a user had listened to some music that he/she does not 'like' in the traditional way. The algorithm, however, does not understand the context of the listening situation and starts to recommend this music to the user. In the second quote, an interviewee describes well how he has become haunted by the 90's Eurodance. One carefree joke can thus lead to quite permanent damage in the 'taste profile' of user.

6.2 Biases or affordances of algorithms

User perceptions of algorithmic recommendations had clues of various biases – including quantitative over qualitative, genre-related, regional and cultural and commercial. These characteristics of algorithmic recommendations and digital technology in general are analyzed in this subchapter. The analysis of biases is important since it provides answers to the research questions in terms of how music recommender systems shape the practices of listening and discovering music.

It has to be noted, however, that when using the concept of *bias*, I understand it as a feature of characteristic of technology that is not 'good' or 'bad' per se. Bias can be understood as relative of *affordance* (see Gibson, 1979; Hutchby, 2001) which is an “opportunity for or invitations to action that things present to actors” (Lievrouw, 2014, p. 48). In my opinion, these two concepts describe similar phenomenon although they come from different academic backgrounds: affordance is commonly used in perceptual psychology although it is used in many other disciplines as well; bias, however, comes from the studies of technology. Both of them can be applied to describe action and interaction between the user and the technology. Douglas Rushkoff (2011) defines bias as an imbalance that has a tendency to favor certain behavior or action (p. 26). Every media technology has its own biases so it's obvious that we have to ask what kind of action music recommender systems favor. Furthermore, these biases are reflected in relation to biases of human cultural intermediaries.

First, the critique of ability to interpret meanings was put against the ability of humans. Most informants saw that humans – whether it was friends or DJs – were better at understanding

en tykänny siit suurimmasta osasta ja sittenhän se tulee sinne ku se näkee et nyt menee paljon tämmöistä musaa ni sit ne laittaa paljon sitä semmosta kaikkee.”

complex meanings around musical content. Recommendations offered by algorithms were considered 'more random' or 'not so aware' compared with if a friend suggests something. Playlists can be also juxtaposed to the work of DJ in which the order of tracks is crucial in terms of the flow. In order to maintain the flow, the playlist should have a constant tension. This is something that algorithmic lists were seen to lack.

"Yeah, the algorithmic recommendation is much more random. If some friend recommends it's not daily activity, it's usually something good for real. - - But yeah, Deezer is pretty random, sometimes it has good recommendations, the 'Flow' uses well your own playlist but eventually, it's not so good recommender. It's not so aware." (I4, 7)

"Kai siin ihmismielessä on jotain sellasta mikä pystyy vähän laajemmin ulottaa niitä yhteyksiä erilaisten musiikkigenrejen välillä. Et äsken tuli tollanen biisi ja nyt mä soitanki jotain ihan toista genreä. Et jännite säilyy edelleen. Et se on hyvä DJ:n taito. Ni ehkä se on se taito mikä puuttuu siltä Spotifyn suosituksilta. Se on vähän liian samalainen vähän liian pitkään."

"Maybe human mind has something that can identify connections between various music genres on a wider scale. So, now I played this piece and now I will play something from different genre. So the tension lasts. That's the skill of a talented DJ. Maybe that's the skill that Spotify's recommender lacks. It's too similar a bit too long." (I6, 7)³⁶

The interviewees were asked, in general, about their reflections on how artificial intelligence differs from human intelligence. Most of them thought that while the development of AI is interesting it is also slightly worrying. AI was still seen as a 'cold' and mathematically logical agent that is, for now, clearly different than human intelligence. Humans were seen as more complex and social.

"And then again, do they (=systems) have a complete understanding of what is humanity, in the end, and lots people argue that artificial intelligence is soon comparable to human intelligence but I slightly doubt it because what's inside human head is somehow more complicated and more social." (I4, 8)

³⁶ "Kyllä tuo (algoritminen) on paljon randomimpi suosittelu. Et kyllä ku joku kaveri suosittelee ni ei se oo semmosta päivittäistä että joku kaveri suosittelee. Sit se on yleensä et nyt on oikeesti joku hyvä. - - Mut joo toi Deezeri on semmonen aika random, et kyl se joskus suosittelee ihan ookoo et se flow toimii semmosena et se käyttää aika hyvin sitä omaa listaa mut ei se silleen loppupeleissä niin kauheen hyvä suosittelija. Se ei oo niin tietoinen tavallaan."

"Kai siin ihmismielessä on jotain sellasta mikä pystyy vähän laajemmin ulottaa niitä yhteyksiä erilaisten musiikkigenrejen välillä. Et äsken tuli tollanen biisi ja nyt mä soitanki jotain ihan toista genreä. Et jännite säilyy edelleen. Et se on hyvä DJ:n taito. Ni ehkä se on se taito mikä puuttuu siltä Spotifyn suosituksilta. Se on vähän liian samalainen vähän liian pitkään."

”It’s something that is interesting and it has a lot to do with how we draw the line between human and machine, so how ‘humane’ artificial intelligence can eventually become. Or can it? - - It is related with lots of scientific stuff that are still in child’s shoes in terms of how artificial intelligence could be made more ‘humane’, so that the ‘cold’ logical interface would disappear.” (I2, 7)³⁷

Three interviewees noticed this confrontation in terms of curation. In the first quote below, the interviewee notes how Apple Music marketed their service by declaring how all their playlists are made by human experts. It seems that in this debate, Apple has taken an approach in which human curation is seen as fundamentally better and somehow more authentic. In the second quote, another interviewee notes that while recommender systems are run by algorithms they are still just like any curation. The technology is then only a mediator in between, amplifying and transforming the act of recommendation. Although we may easily think so, AI is not an independent actor but not more than an autonomous entity that is guided and steered in a certain direction. This is why it has the same logic as human curation.

”First thing that comes to my mind, what Apple Music did was that they marketed their playlists by saying that their are produced by DJs. I haven’t listened to them at all but they used it as a marketing tool, clearly it seems it’s researched that people like that there’s a human touch, anywhere...” (I6, 8)³⁸

”Nonetheless, I think that this artificial intelligence is also human curation. I don’t see it only as a tool that people use, it’s only mediated, it’s human curation mediated by artificial intelligence. - - But anyway, this artificial intelligence is not independent actor, in a sense, it’s not like that it’s not guided to certain direction all the time. So that’s why I think that it’s based on same logic, eventually.” (I7, 10)³⁹

³⁷ ”Ja sit toisaalta se, että onko niillä sitte loppupeleissä ihan täydellinen ymmärrys siitä että mikä on ihmisyyys ja monethan väittää että tekoäly on jo kohta tavallaan vastaa ihmisälyä ni mä vähän epäilen sitä koska ihmisen pään sisältö on jotenki vähän monimutkaisempi ja sosiaalisempi ja tälleen.”

”Se on sellain asia mikä on mielenkiintosta ja siihen liittyy aika paljon se mikä on inhimillisen ja tietokoneen tavallaan rajanveto et miten inhimilliseksi se tekoäly pystyy lopulta tulemaan. Vai pystyykö? - - Siihen liittyy niin paljon semmosia tieteellisiä asioita jotka vielä on aika lapsenkengissä sen suhteen miten tekoälystä sais inhimillisempää. Et siitä häviäis se kylmän looginen se pinta.”

³⁸ ”Ensimmäisenä tuli mieleen se mitä Apple Music teki, ne markkinoi itseään sillä että ne niiden soittolistat on DJ:n tekemiä. Mä en oo kuunnellu niitä ollenkaan mutta ne käytti sitä markkinointikeinona, selkeesti siinä on joku tutkittu pointti et ihmiset tykkää siitä että siinä on ihmisen kosketus, missä vaan...”

³⁹ ”Mä nään kuitenkin et se tekoälykin on ihmiskuratoointia. Mä en sillai nää et se toimijuus olis sit, et se on vaan väline mitä ihmiset käyttää, et se on vaan välitteistä, se on keinoälyn välittämää ihmisen kuratoointia. - - Mut sillai et se kuitenkin, se keinoäly ei oo sillain itsenäinen toimija etteikö sitä koko ajan ohjattais johonkin suuntaan ni sillan mä ajattelen että se on kuitenkin viime kädessä, se toimii samalla logiikalla.”

Still, one interviewee pondered whether there is a fundamental gap between AI and human intelligence. If something was done by human, it would not be seen as a guarantee for being better.

”Well, I would like to avoid saying ‘it’s good because it’s made by human’ because it’s not a guarantee. That’s also a potential topic for bunch of research. Like, what are the mechanisms behind the work of DJ versus algorithm.” (I6, 7)⁴⁰

In the quote below, an interviewee also raises an interesting point concerning sample culture. If a certain sample becomes highly popular and thus widely used in popular music, it is not far-fetched to imagine how someday AI can produce somewhat enjoyable music from samples. This interviewee also wondered if AI could be used to analyze what kind of 'hooks' please the majority of people and if there would come a time when only experts and authorities could tell whether a song was written by human or an algorithm.

”Sometimes it has come to my mind when for example, I have accidentally visited some night club and heard a song and thought that how many million times this sample has been used or something... It’s that specific snare sound that is cool in club hits at the moment, so it’s not far away from that we just put the machines to make the songs.” (I4, 9)⁴¹

6.2.1 Quantitative efficiency over qualitative understanding

It was a common conception that algorithm-driven recommendations seemed to be biased to quantitative efficiency over qualitative, deeper understanding. This is aligned with what Morris (2015, p. 451) has pointed out. Digital technology, in general, and algorithms favor mathematical and quantitative understanding since they use numeric data as a source. This may help users to discover music in new ways and notice new connections between different pools

⁴⁰ ”No siis mä haluaisin välttää sellasten no kyllä se on hyvä koska sen on ihminen tehny koska eihän se oo mikään tae. Et sekin ois semmonen aihe mistä vois tehdä aika monta tutkimusta. Mitkä ne on ne mekanismit mitkä siellä DJ:n taustalla vaikuttaa verrattuna algoritmiin.”

⁴¹ ”Kyllä mulla on käyny joskus mielessä että ku vahingossa käyny jossain yöelämässä jossain klubilla ja kuulee jonku biisin ja on sillee että montakohan miljoonaa kertaa tota yhtä samplea on käytetty, tai jotain... se on se tietty snare-ääni mikä on nyt muotia nyt noissa klubihiteissä ni sillee että et ei siitä oo enää pitkä matka siihen että vaan laitetaan koneet tekemään se biisi...”

of content from unexpected locations. Still, while quantitative deduction and computing power is amplified, the qualitative side of understanding is easily reduced (see Ihde, 1990, p. 78).

”Well, generally speaking, I think that artificial intelligence is a good thing, let’s say we have loads of data and we would have a possibility to discover connections and links between things, so instead of that I go look for them - - it makes things quicker.” (I1, 6)

”Well, speaking of strengths, it can be used to pick up details and make different calculations, stuff that could not be done so quickly with human touch.” (I5, 8)

”It offers various dimensions, scope and speed and maybe sort of surprising connections which can result in funny or unpleasant surprises.” (I7, 10)

”Well, for example, if we think of Spotify or Apple Music who have a massive amount of music, they have knowledge of all of it in order to make recommendations, it has a lot of what to choose.” (I8, 7)⁴²

These quotes illustrate how users have perceived how algorithmic recommendations make processing of musical data more efficient on certain parameters. The personalized aspect of music discovery becomes amplified since the system can process all your data of usage. While a friend might know in qualitative sense what you like the best, it cannot compete with the quantitative processing power of an algorithm. This is especially useful in terms of finding details from music that are numerically observable: volume, tempo and sound, to some extent. All big streaming services have huge catalogues so they 'know' potentially more music than any human on earth.

⁴² ”No siis yleisesti, mä nyt ajattelen että tekoäly on aika hyvä että jos ajatellaan että meillä on hirmu paljon dataa ja sitten siellä ois mahdollista löytää asioiden väliltä linkkejä isosta massasta ni sen sijaan et mä meen etsimään sitä - - ni se nopeuttaa asioita.”

”No varmaan vahvuuksia just se että sillä pystytään semmosia niin yksityiskohtaisia varmasti poimimaan ja tekee kaiken maailman laskelmia, semmosia mitä ei niin nopeesti pystyis ihan pelkällä jotenkin ihmiskosketuksella tekemään.”

”Se tuo siihen erilaisia ulottuvuuksia ja laajuutta ja nopeutta ja ehkä semmosia yllättäviäkin kytkentöjä mitkä sit ilmenee hauskoina tai ikävinä yllätyksinä.”

”No se että sillä on esim. jos miettii jotain Spotifyta tai Apple Musicia missä on valtavat määrät musiikkia ni sitä musiikkia on oikeesti paljon, sillä on tietoutta siitä kaikesta ni sit se pystyy suosittelemaan, et sillä on paljon mistä valita.”

6.2.2 Genre and popularity

As already noted before in some quotes, the relevance of recommendations was somewhat genre-related. That is to say that if you listen to genre X you are more likely to get better recommendations than if you listen to genre Y a lot. This can be due to differences in how in detail the metadata of the musical content is produced.

”It’s also so genre-related how well they work, the bigger the artist, the better it works. I can notice there are differences, for example, if I listen to an artist radio of an artist X, an artist I listen a lot, I get good recommendations, maybe like Swedish pop scene which I would not otherwise meet. But then, for example, in Finnish rap they are not relevant. - - It’s so genre-related.” (I3, 8)

”It succeeds to offer everything good in rap, a bit more underground stuff but maybe not too much underground so that the artist has a sort of momentum. But in my opinion, this doesn’t happen in terms of metal music. The underground level there is worse.” (I6, 9)

”Speaking of Youtube, it never works, in my opinion. - - Only thing it’s worth is with some 80’s or 90’s hits, it offers a next one and it’s often stuff from same genre and era and tha’s nice. But in my opinion, it works only with these 80–90’s and stuff that’s based on a music video” (I7, 2)
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These quotes above illustrate how recommendations are genre-related but also popularity-related. In the first quote, an interviewee assumes that when listening to artist radios, the more popular is the artist the better are the recommendations in general. In the second quote, another interviewee specifies that he wants to find both underground rap and metal music but the system work better with the former than the latter. In the third quote, another interviewee criticizes

⁴³ ”Sekin on niin genrekohtasta et toimiiks ne hyvin tai mitä isompi nimi sitä paremmin ne toimii. Mä huomaan et on eroja vaikka siinä että jos mä vaikka no artisti X on, jonka artistiradioo mä käytän tosi paljon et sen kautta tulee tosi hyviäkin ehdotuksia ehkä ruotsalaisesta pop-skenestä mihin ei ehkä muuten tutustuis kun just sen artistiradion kautta. Mut sitten esim. just tää suomirapissa ni sitte ne ei niin osu. - - Se on tosi genrekohtasta.”

”Vähän just mikä rapissa onnistuu mulle et kaikkee uutta hyvää, vähän UG:mpaa kamaa mut ei ehkä liian UG:ta et siin on jonkun näkönen momentum siinä artistilla. Mut mun mielestä valitettavasti vaan metallimusiikin saralla ni se ei toteudu. Se taso siellä samalla UG-levelillä on huonompi.”

”Sit tosta Youtubesta niin se ei mun mielestä jotenki toimi ikinä. - - Ainoo missä se toimii on jossain kasariysärihiteissä sillai et se tarjoaa sitten sitä seuraavaa ni sit aika usein sieltä tulee sitä saman genren ja aikakauden juttuja ni se on musta ihan jees. Mut se mun mielestä toimii vaan näissä kasariysäri ja musiikkivideopohjasissa jutuissa.”

Youtube's related video queue. For her, it only works well when listening to and watching music videos of 80's and 90's hit music.

One interviewee mentioned that not long ago it was really hard to search for classical music from Spotify. She had already found a reason for this as she stated that metadata of classical music had been inaccurate. While the situation has got better over the years it is still likely that 'genres' like classical music are downplayed in terms of recommender systems.

”Well, sometimes I’m confused, when I started to use Spotify I was disappointed that classical music had really insufficient metadata. So when I looked, for example, for Beethoven’s 3rd, the search function was just useless... the metadata was just scattered and there could be like name of Herbert von Karajan or any other soloist who hasn’t even, there are no soloists in a symphony, so it was the artist of the album which was highlighted. So it was really difficult to use with classical music.” (17, 8)⁴⁴

6.2.3 Regional and cultural

Genres were not the only sources of bias. At least two interviewees noticed that if they listened to music from a certain country, they were recommended a lot of music based on that and nothing else. All of the interviewees were Finnish and lived in Finland which is why many of them got recommendations from here. Thus, while your listening behavior can be used to recommend you music from certain area of world, your own location also frames the recommendations you get. Interviewees perceived this method mostly irrelevant since many of us do not listen to music, on a daily basis, based on where it is produced. This is just another example of how listening is inaccurately contextualized.

”I feel like Spotify just inspects that ‘okay, this artist is Korean’ or it just puts all these Koreans in the playlist just because I listen to a few Korean artists and it doesn’t go right.” (18, 4)

⁴⁴ ”No mua joskus ihmetyttää, tai sillon ku mä rupesin käyttää Spotifyta ni mua harmitti se että klasari oli tosi huonosti metadatotettua sinne. Eli ku etti esim. Beethoovenin 3. ni se oli ihan onneton se mitä se hakutoiminto tarjos ja sit niistä ei saanu... ne oli ihan sikin sokin se tieto mitä siitä äänitiedostosta annetaan et siinä saatto olla Herbert von Karajan tai sit joku solisti, mikä ei itse asiassa ole edes, eihän sinfoniassa ole mitään solisteja, vaan sen albumin joku artisti joka on kuitenkin ykkösenä siinä. Et se oli hankalaa käyttää klasarin kanssa.”

”Maybe, particularly in terms of Finnish music, it recommends me like Laura Voutilainen and I don’t listen to it at all. I think that it happens because I listen to a lot of Finnish music and although it’s music with same language it’s not similar music. So for example, it recommends all the new songs from Juha Tapio and I’m like what?” (I3, 5)⁴⁵

These biases are aligned with what Morris (2015, p. 457) discussed. Recommender systems are still deeply Western and Anglo-Saxon-centered software which means that they carry certain cultural categorizations. Some music from a certain genre or certain geographical or cultural area has better and a more detailed metadata which, in turn, means that it will be found more often by the recommenders. In conclusion, based on literature and data, it could be argued that Western popular music is highlighted and more nuanced while other cultural areas are either hidden or somehow simplified as it was seen in the example of Korean music.

Three interviewees were also concerned that the algorithms are somehow culturally biased. That is to say that these systems are developed mostly in western Anglo-American countries which is why they have certain values and conceptions of music embedded in them. As discussed in literature review, algorithms are not produced in 'social vacuums' but developers leave their mark to their products. Thus, recommender systems reflect the culture they are produced in and in that sense, are *recursive* – framed by and re-framing the culture (Gillespie, 2014, p. 183, 192).

”Nevertheless, in my opinion, the intelligence of AI is based on assumptions coded by humans of what is wrong and right. What kind of life you live, what things are linked? And that’s why, if AI learns from its users, it’s really important that these users come from as many context, age group as possible, everything that can influence on what they see as relevant for living, being and knowing. What do they think is important information. - - So that the everyday life in countryside in India is just as relevant as everyday life of a student in city of Helsinki.” (I1, 6–7)

⁴⁵ ”Must tuntuu et Spotify just aika paljon kattoo et okei tämä artisti on korealainen tai et se vaan lykkää sinne niitä kaikkia korealaisia siks että mä kuuntelen jotain korealaisia ja sit se ei mee yhtään nappiin.”

”Ehkä just suomenkielisen musan kohdalla se ehdottaa mulle jotain Laura Voutilaista enkä mä kuuntele sitä yhtään. Mä luulen et se tulee siitä et ku mä kuuntelen tosi paljon suomenkielistä musiikkia ni se ei erota niitä kielieroja tai et vaik se on samankielistä ni se ei oo samanlaista musiikkia. Et ku tulee just kaikki Juha Tapion uusimmat ja mä oon et mistä?”

” I do see it more as a chance but I’m always wondering what are the principles behind them, what are the values the intelligence is based on. What kind of decisions this intelligence considers as good, for example in terms of music, because it lacks the emotional dimension. On the other hand, I don’t know much about AI. It’s possible that I have some prejudices that are not correct at all but I would say that it’s (=AI) a good addition but I wouldn’t count everything on that.“ (I3, 9)⁴⁶

In the first quote above, the interviewee states that in the end, the intelligence of the AI emerges from the assumptions coded in the programs. If the coders come from a relatively homogenic background, the code is destined to fail to serve the diversity of users. That is why the developers should consist of culturally diverse people that can pay attention to these potential biases. In the second quote, another interviewee acknowledges that artificial intelligence is the technology of possibilities but she is worried about the values that circulate around its development. While she admits that she may have some prejudices about the technology she still maintains a cautious stance towards it. If we think of these ideas in terms of what Gillespie (2014) talks about recursion, culturally biased algorithms affect how the culture is perceived: what is valued, how it is framed and what is excluded or included in it.

6.2.4 ‘Commercial’

Unlike these two previous biases, the issue of ‘commercial’ bias was brought up explicitly by the interviewer. By ‘commercial’ bias I refer to a situation in which the algorithm recommends music that does not seem to be based on the preferences of user but rather just because it is popular and aggressively marketed. The reason for this is that this issue has already been

⁴⁶ ”Kuitenkin mä oon sitä mieltä että tekoälyn älykkyys tulee siitä ihmisen koodaamista oletuksista siitä, mikä on oikein, mikä on väärin. Minkälaisessa elämässä eletään, mitkä asiat linkittyvät toisiinsa. Ja sen takia esimerkiksi jos tekoäly oppii käyttäjistänsä ni se on tosi tärkeä sitten että ne käyttäjät tulee mahdollisimman monesta toimialasta, kontekstista, ikäryhmästä, kaikesta mikä saattaa vaikuttaa siihen et mitä he näkevät relevanttina elämiselle ja olemiselle ja tiedolle. Mitä he ajattelee että on tärkeää tietoa. - - Että se Intian maaseudulla oleva arki on ihan yhtä relevanttia kun taas sitten Helsingin keskustassa opiskelijan arki.”

”Kyl mä nään sen enemmän mahdollisuutena mut mua aina mietityttää mitkä ne periaatteet siellä taustalla on, et mihin arvoihin se perustuu siellä taustalla se äly. Tai minkälaisia ratkaisuja se äly pitää hyvänä et just ton musiikin kohdalla et pitääks se hyvänä ku siitä puuttuu se tunnepuoli ni se on ehkä mikä siinä... Mä en toisaalta oo hirveesti tekoälyyn tutustunu. Vähän sillee et mulla saattaa olla semmosia ennakkoluuloja jotka ei pidä paikkansa ollenkaan mutta ehkä just se et must se on ihan hyvä lisä mut mä en jättäis sen varaan kaikkea.”

discussed in recent literature which is noticed also in this thesis. When the interviewees were asked if they had noticed that the recommender systems would offer some music only based on commerciality, the answers were polarized. Some of the interviewees had noticed that they got recommendations that could not be explained by any other parameter except commerciality. On the other hand, some had not noticed anything special. This can be, however, explained by how these interviewees use very different applications of recommender systems. For example, only in Spotify, a user can listen to Discover Weekly (a two-hour playlist of personalized recommendations), or 'novelties' (Uutuuskattaus in Finnish, a playlist of recently released music, personally recommended). These two playlists practice very different logic since the latter is more focused on new released music and likely more biased to commercial content.

”I feel like it’s emphasizing a lot more such commercial artists, yeah, I do understand that they are more easily separated because they are listened by many others, they are big names after all, it’s no surprise that indie bands with 1000 listening times are not there. - - And funnily, if I have had a phase, like three years ago, with a big artist and I have listened a lot to its album, Spotify may recommend me its new song although it was a long time ago. So it has a long memory. But it doesn’t apply with these ‘smaller’ bands if they have released something, it’s applies mostly with the big artists. But hey, this is a gut-feeling observation.” (I3, 7)

”I feel like in the playlist, I’m not sure, but I feel that there are lots of new songs and then like 20 years old ones but not like 10 years old ones. Somehow, you could deduce from the sound, I’m not sure but I could assume. So that raises a question whether they pay for being there on the list which would suck. If I heard that happening I would propably never use it again.” (I6, 6)

⁴⁷

⁴⁷ ”Must tuntuu et se korostaa paljon enemmän semmosia kaupallisempia artisteja toki, kyl mä ymmärrän sen ihan et helpomminhan ne sieltä varmaan erottuu ku niitä kuuntelee moni muukin tai et muutenkin isoja nimiä et ei ihmekään et sinne ei niin tuu nitä tuhannen kuuntelukerran indiebändejä. - Ja sit aika hassusti et jos mulla on ollu vaikka 3 vuotta sitten joku hyvin isonkin artistin kausi ja mä oon kuunnellu jotain sen levyä tosi paljon ni sit Spotify saattaa ehdottaa mulle jotain sen jotain ihan uutta biisiä, vaikka siitä ois ihan tosi kauankin. Et siinä on tosi pitkä muisti. Mut se ei tuu kuitenkaan niiden pienten bändien kohdalla se vastaavat et jos niiltä on tullu joku vastaava uus julkasu et enemmän se mun mielestä tulee noitten tosi isojen artistien kohdalla. Mutta tää on nyt tosi musta tuntuu -havainto.”

”Must tuntuu et siel (listalla) on, en oo ihan saletti mut must tuntuu et siel on aika paljon uusia biisejä ja sit semmosia 20v vanhoja et semmosia 10v vanhoja siel ei oo. Tai jotenki siitä soundista vois päätellä, en oo varma, mut voisin olettaa. Että sitte herää ehkä kysymys että maksetaanko siitä että siel listalla ollaan. Joka on sit taas vähän semmonen nääh. Et jos mä kuulisin et se tapahtuis ni sit mä en varmaa käyttäis sitä koskaan.”

”Yeah, I have clicked it maybe couple of times but it didn’t impress me, I don’t know what was wrong with it but I found it boring. Maybe I found it as too much like ‘stock market’ so now they are selling these novelties again, I felt it wasn’t for me.” (17, 6)⁴⁸

In the first quote above, an interviewee explains how she thought that Spotify’s ‘novelties’ playlist had a relatively better memory in terms of popular artists. While the interviewee admits that this is a “gut feeling” it is still something she had paid attention to. In the second quote, another interviewee ponders whether artists or labels pay Spotify to get in the recommendations lists since there is a historical gap in his recommendations. In the third quote, another interviewee perceived Spotify’s novelties as a sort of ‘stock market’ which she did not prefer. While it can be argued that these observations do not prove anything, they, nevertheless, illustrate how commercial interests are implicitly or explicitly criticized. Users do not want advertisements in their recommendations that should be personalized.

The observations that recommender systems seem to be biased to commercial content is supported by the literature. Companies that produce this software, algorithms and recommender systems are players of the market economy so it is only natural that they build their systems accordingly. According to Mager (2012), recommender systems are made for capitalist interests because they monitor users to develop their aggressive personalized marketing strategy but in addition to personalization, it is logical if companies boost ‘commercial’ or ‘popular’ artists in their playlists because such content has proved to please a majority of users.

6.3 Negotiating the agency

One of the biggest issues I was interested beforehand was how recommendations are perceived as a whole and how their 'knowledge' of user's musical taste is interpreted. Again, the interviewees had polarized views. On the one hand, two interviewees saw that the recommendations got better over time and when they say 'better' they mean more relevant in terms of their personal taste. In other words, they valued relevance slightly over novelty.

⁴⁸ ”Joo mä oon ehkä pari kertaa klikannu sitä mut se ei jotenki tehny muhun vaikutusta mä en tiää mikä siinä oli mut se oli mun mielestä tylsä. Siit mul tuli ehkä liikaa sellai pörssimeininki et nyt mulle taas myydään näitä uutuuksia, et siinä tuli jotenki semmonen et tää ei nyt oo mun juttu.”

”Yeah, they have definitely got better and I have seen that the more I use them the better they become. So it gets more hints of what to recommend to me. But it’s just based on my usage, not like that there would be a wider set that got me listen to more varied music. Just like that the more I have used Spotify the better the playlists work.” (I3, 9)⁴⁹

In the first quote above, an interviewee tells how recommendations have become better over time and using the service. This is logical since the usage data is crucial for identifying the profile of the user. What is more interesting, though, is that she notes that the playlists only adapt to her preferences; they are reactive rather than proactive. In other words, the lists did not make him listen to music more diversely but rather vice versa.

”If I remember correctly, it didn’t work so well at the beginning so there were some random songs. But pretty soon, they probably repaired, it began to recommend material that I had listened to just recently. That constructed a stylistic profile so that when I liked something it recommended similar to that. So maybe in that sense I used it a lot. It provided an experience of stylistic profile which intrigued me the most.” (I2, 4)⁵⁰

In the second quote above, an interviewee talks about the formation of aesthetical or a stylistic profile by which he refers to the collection of content that is closely related to each other. These informants did not perceive this 'filter bubble' (see Pariser, 2014) as a negative thing but as a possibility for deepening one’s knowledge of some area of music. One interviewee (quote below) also brought up that if recommendations were more novel and more irrelevant, it was somewhat more acceptable and interesting if he was not so familiar with the genre. Thus, it seems that users are more critical to recommendations of genres they are already familiar with and more open if the genre or elements in the music are novel.

⁴⁹ ”Kyl se on varmasti parantunu ja mä oon nähny sen et mitä enemmän mä niitä käytän ni sitä parempia niistä varmasti tulee. Et se saa enemmän niitä hintsejä minkä kautta se voi mulle ehdottaa. Mut sit just mun käytön kautta, eikä niin että sinne ois tullu laajempi kattaus että mä oisin ruvennu laajemmin kuuntelee musaa vaan sillee just että mitä enemmän mä oon käyttäny Spotifyta ni sitä paremmin ne listatkin toimii.”

⁵⁰ ”Muistaakseni se ei ihan toiminu niin hyvin (alussa) et sinne tuli vähän mitä sattuu biisejä. Mut aika nopeesti se ilmeisesti korjattiin ni sinne alko tulee semmosta materiaalia mitä oli just hiljan kuunnellu. Ni siitä muodostu semmonen jatkumo silleen et mitä on tykänny kuunnella paljon ni sit tulee jotain vähän vastaavaa. Et ehkä sen tyyppisessä yhteydessä käytti sitä paljon. Et se tarjos niinku semmosen kokemuksen siitä et se niinkun ne biisit mitä on kuunnellu ni tavallaan se tyylillinen jatkumo on olemassa siinä et se viehätti kaikista eniten.”

”Maybe, speaking of music styles you hear rarely, funk or soul, for example, those you hear quite rarely from radio or anywhere in Finland, but that kind of stuff was there. I don’t know, I don’t always save them but there’s plenty of what to discover.” (I4, 7)⁵¹

Given that usage of recommender playlists can be understood as a process, it can be analyzed in the context of Lievrouw’s (2014, p. 46) mediation framework. The algorithm-driven playlists are the artifacts, ways of listening to them are the practices and conventions of listening and discovering music are the social arrangements. As the recommender technology is being developed – by the developers but also by the users who use it – artifacts are reconfigured. If we use Spotify’s weekly playlists as an example, they are reconfigured every week based on what the user has listened.

While it was a common conception that algorithmic recommender systems were biased to personalization, the interviewees were not unanimous whether it was a good or bad thing. Furthermore, it has to be noted that while personalization seems to be an evident source of bias it was not included in the list in the previous subchapter. The reason for this is that personalization is something that these systems are explicitly marketed with. The whole point of algorithmic recommendations is to provide personalized feeds. This is why it was not analyzed among the other biases since it is taken for granted in this study.

”Maybe the first weakness that comes to my mind is that everything is accessible and attachable to something already existing so that the sort of personal experience of discovery becomes obsolete. I guess that it favors quite a lot sort of experience of consumer-based consumption of music so it might offer just a easy solution, you push the play button and then the artificial intelligence produces (a list) based on Facebook so you don’t even have to know anything about music. It produces that musical experience and whole package automatically.” (I2, 7)⁵²

⁵¹ ”Ehkä tollasissa musatyyleissä mitä kuulee tosi harvoin, just joku funk tai soul on hyvä esimerkki tai sitä nyt kuulee tosi vähän missään radiossa tai missään Suomessa ylipäänsä ni sellasista tulee kaikkii uusia paljon. En tiää, ei niitä välttämättä aina tallenna talteen mutta tulee paljon uutta kyllä mihin vois sitte perehtyä.”

⁵² ”Ehkä ensimmäisenä tulee mieleen se heikkous et kaikki on saavutettavissa ja liitettävissä johonkin jo olemassa olevaan et sit semmonen tietynlainen henk. kohtainen kokemus siitä et kun löytää jotain ni jää sen myötä pois. Mä veikkaan et se palvelee aika paljon semmosta kuluttajakeskeistä musiikin kuluttamisen kokemuksesta et sit se saattaa tarjota niin helpon ratkaisun et sä painat vaan playta ja sit se tekoäly tuottaa vaan jonkun Facebookin perusteella et sun ei tarvi ees valita tai tietää musiikista mitään et se tuottaa sen musiikillisen kokemuksen ja kokonaisuuden automaattisesti.”

“It feels like radio channels, well, I mostly listen to Yle X or some other pop channels, but it feels that they play the same songs. And if something new is recommended or a new artist is highlighted, it’s usually a Finnish artist which I rarely listen to. In that sense, it feels that the opinions of the DJs are not taken into account. So when a radio host says that this is my new favorite, I want to recommend this to you, I don’t trust it because I feel it’s the channel in the end that’s calling the shots. So it’s kind of cruel to say that the machine is closer to me than this person. It feels like it.” (I8, 6)⁵³

These two quotes illustrate the opposite conceptions. In the first, an interviewee addresses interestingly how while recommendations are personalized they can reduce the experience of personal discovery. In his opinion, recommender systems might provide too easy solutions to discover and consume music so users do not have to know anything about the music. It can be questioned, though, how many casual users actually want this. This conception was also more common among interviewees that had an academic background in music. In the second quote, another interviewee takes a different stance by noting that she actually thinks that the system knows her better than institutional recommenders such as radio and this is a positive thing. Thus, it could be suggested that the approach to the personalization of recommender systems is influenced by how a user approaches music in general. More casual listeners will probably embrace this technology with little criticism while users who consider themselves more than casual listeners are likely to see the negative aspects. This affects, of course, how users see the amplifying and reducing dimensions of the technology (see Ihde, 1990).

However, filter bubbles were also strongly criticized. Two interviewees explicitly thought that the recommender systems made simplifying deductions and provided only a comfort zone. It seemed that this view was common among interviewees to whom listening to music was a big part of identity and who were really precise on what they wanted to listen. In addition to that, again, different recommender systems work on different logic. For example, Spotify's Daily Mixes that are highly personalized flow-type lists that do not provide very novel experiences were criticized for being too comfortable or familiar.

⁵³ ”Tuntuu et radiokanavat suosittelee, no kuuntelen lähinnä Yle X:ää tai sit jotain muita tämmösiä poppiskanavia ni tuntuu et siel soi ne samat biisit. Ja sitte jos suositellaan jotain uutta tai nostetaan esiin joku uusi artisti, se on yleensä suomalainen artisti, mitä mä kuuntelen tosi vähän. Ni sillä tavalla tuntuu että ne toimittajien mielipiteet ei näy niin hyvin ja vaikka joku radiotoimittaja väittäis että tää on nyt mun lemppari, haluan tätä nyt suositella teille ni silti mä en jotenki luota siihen, koska must tuntuu et se on kuitenkin se kanava joka tekee ne päätökset siellä taustalla. Et kyl se on enemmän, aika julmaa sanoa että kone on silleen lähempänä minua kuin tämä ihminen. Tuntuu siltä.”

”And sometimes it feels that it has picked up some stuff ‘too clearly’ and I don’t mind it, I’m interested, but sometimes it feels that it makes simplifying deductions of my taste of music.” (I5, 5)

”But when you start to think of it, little by little, you start to notice what kind of soundscape, broadly speaking, it offers. So if you want to fall into that, it’s nonetheless a comfort zone it offers.” (I6, 6)⁵⁴

In addition to polarized views on filter bubbles, the majority of interviewees also noted that the recommendations were sometimes basically too random or irrelevant to them. One reason for this was that recommending is, after all, more or less ‘toss-up’ due to issues discussed in this chapter. Sometimes recommendations can be highly relevant and novel and sometimes they seem totally random. As there are different recommender systems practicing different logics there are multiple reasons for a recommendation to be poor in certain situation. This issue of toss-up reflects what can be called as corrupted “silence conversation” between the user and the system. Flynn (2016) notes that there is always a chance for conflict since the algorithms can misinterpret the actions of users (p. 54).

”So when the playlists have been built there it works. Now, though, I find the playlist too wide, the recommendations worked better before than nowadays. But on the other hand, I find it as a bit of a problem if you fall into to a rut, if you only listen to particular kind of music and it recommends always similar stuff. So haha, although I said earlier, that the system should recommend something I could like, on the other hand, lots of things are left unnoticed.” (I4, 4)

”Yeah, there are some really weird (stuff), like Chinese pop, like I would never... So I find the list really scattered, it feels that it’s not personalized for me and often I don’t like the songs at all. Sometimes I go check them but listen very rarely.” (I8, 3)⁵⁵

⁵⁴ ”Ja sit joskus tuntuu et se on liian selkeesti poiminu jotain tiettyjä juttuja eikä se haittaa, kyl mua kiinnostaa mutta väillä tuntuu et se tekee yksinkertaistavia johtopäätöksiä musiikkimausta.”

”Mutta ehkä ku tätä nyt alkaa miettimään, viitaten tohon aikasempaan että sen alkaa jo pikku hiljaa tunnistaan sen että minkälaista soundimaailmaa – aika laajas merkityksessä – minkälaista soundimaailmaa se tarjoaa. Et jos haluaa valahtaa siihen vaan semmoseen, se on vähän kuitenkin mukavuusalue mitä se tarjoaa.”

⁵⁵ ”Et sitte ku sinne on rakentunu ne listat ni se sit toimii. Tosin nyt tuntuu et se on vähän liian laaja se lista et tosiaan ne suosittelujutut toimi ennen paremmin ku nykyään. Mut sitte toisaalta mä pidän sitä vähän ongelmana että jos urautuu jos kuuntelee vaan jotain tietentyypistä ja se suosittelee aina sitä samanlaista. Ni vaikka mä hehe sanoin aiemmin et suosittelee semmosta mistä vois tykätä mut sitte toisaalta siinä jää paljon semmosta pois mitä muute vois huomata.”

”Joo siel on jotain ihan tosi kummallisia, tyyliin kiinalaista poppia, silleen et mä en todellakaan.. Et se tuntuu tosi hajanaiselle se lista, se tuntuu et sitä ei oo räätälöity mua varten ja usein ne biisit on just semmosia että mä en yhtään tykkää. Sitte mä käyn aina joskus kattoo et mitä siellä on mut hyvin harvoin kuuntelen.”

In the first quote above, an interviewee explains how his recommendations have become worse after gathering music to his library or playlists. He uses Deezer as a streaming service where music can be ‘saved’ for later use and this library of saved tracks or albums is the source for new recommendations. The problem is that if the library is too diverse, recommendations become more random. This interviewee, however, could not decide whether this was a good or bad thing because he noticed that too safe recommendations do not encourage him to discover something totally new. In the second quote, another interviewee talks about Spotify's Discover Weekly which has offered her for example Chinese pop music, probably based on her preference on Korean music. She felt, however, that the playlist was too random and not personalized at all. These examples illustrate how differently recommender systems can work depending on the user and his/her expectations.

6.3.1 Playing with or manipulating the recommendations

About half of the interviewees did not just reflect the logic of the recommender systems but also ‘played’ or ‘manipulated’ them to some extent. In the following quotes, three interviewees tell how they consciously altered their listening behavior to produce different results.

”I like that (in Spotify) there is this ‘like’ button”, I can click either like it or dislike it if it’s a songs I feel it doesn’t belong to this mode or playlist, so I assume that it learns from my ‘likes’. That’s what I like. Speaking of Soundcloud, I don’t even expect that it would learn anything from me. Because it’s just that I go there for an adventure, I tend to think that I’m the active one who decides to which direction I want to go.” (I1, 4)⁵⁶

In the first quote, an interviewee talks about ‘like’ feature in Spotify, which she assumes is made to help the user to guide the system for better recommendations. This interviewee used also Soundcloud a lot, but she has different strategies for different platforms. She uses Soundcloud to adventurous listening, an activity in which she does not steer the boat but gives the system almost full control of choosing the music. In Spotify, in turn, she takes a more active role by

⁵⁶ ”Mä tykkään siitä ku siellä on se peukku (Spotify), ni mä voin painaa sitä peukkua ylös tai alas jos on joku semmonen biisi mitä mä koen et se ei kuulu tähän moodiin tai listaan ni mä vähän oletan se oppii niistä mun peukutuksista. Siitä mä tykkään. Soundcloudissa mä en edes odota siltä mitään sellasta että se oppis multa mitään. Vaan justku se on semmonen että mä meen seikkaileen mä jotenkin ajattelen että minä olen se aktiivinen joka sitten päättän että mihin suuntaan uin.”

liking songs which she thinks is a good reference for upcoming recommendations. Thus, she is 'playing' the system by its rules, its own functionalities.

"And then I figured out that I should stop listening to this Djent. And then it turned out that it didn't appear there anymore." (I6, 9)

"Yeah, I have been thinking about it, how it could be manipulated. And what's essential is that can it be taught because if I always skip a specific song why it recommends it time after time. - - Well I have been thinking that if I get a (bad) song from certain artist that I know that I know is good in genera, I don't want to click 'don't recommend this anymore' because it can influence on the other songs or similar music, so it may confuse it even more." (I4, 6)⁵⁷

These two quotes above represent a more manipulative approach on these systems. In the first one, an interviewee noticed how he was recommended a lot of metal music he did not like at all. As a result, he was forced to stop listening to a certain metal band he was listening, not for enjoyment but for pure interest in the genre. In the second quote, another interviewee tells how he often ponders whether he should ask the system 'not to recommend' a certain song he does not like although he might like the artist in general. Thus, if the user plays by the rules and requests the system to stop recommending a song, depending on the logic of the system, it can interpret that the user does not like the artist in general. That is to say that the user has to make choices how he/she is to use the functionalities provided by the recommender system.

Manipulating or playing with playlists can be analyzed both in light of Jenkins' (2006a) concept of convergence and Lievrouw's (2014) mediation framework. The quotes above illustrate how users can indirectly affect what kind of recommendations they want to have or to avoid. Unlike in 'old media', the users are no more merely spectators or passive receivers but can actively influence and co-produce the content they get. As recommendations are highly personalized and based on user activity, it can be argued that the line between producer and user becomes blurred.

⁵⁷ "Ja sillen et sitä sitä ei enää ollu siellä."

"Oon mä miettiny sitä kyllä. Just sitä on miettiny että miten sitä vois manipuloida ehkä ite. Ja mikä siinä on olennaista että pystyykö sitä jotenki opettaa et jos aina skippaa jonku tietyn biisin miks se sitten suosittelee sitä aina uudestaan. - - No sitä mä oon miettiny että jos tulee joku biisi joltain artistilta mikä tietää että muuten voi olla ihan hyvä ni sitte ei tee mieli painaa sitä että älä suosittele tätä enää että vaikuttaako se niihin muihinkin biiseihin tai johoki samantyyppiseen musaan, et sekottaako se sitä viel jotenki lisää."

In light of Lievrouw's (2014, p. 46) framework, the user manipulation of playlists can be seen as a *remediation*, in which the practices circulating around the algorithmic playlists can change. Some users refuse to play by the rules and start to actively think what they have to listen or what they have to avoid in order to get proper recommendations. As it was discussed in literature review, Lievrouw (p. 48–50) also suggest that the processes of reconfiguration (artifacts), remediation (practices) and reformation (social arrangements) can be aligned with the features of affordances. Artifacts afford *functionalities* which enable and restrict actors to do things with them. *Relation* between the artifact and the actors is actualized in the practices which may change when actors figure out new ways to use the artifacts. In other words, they find new functionalities. Finally, all these are constantly *learned* in the process of reformation. When personalized AI-driven playlists become more popular and common, people adjust their listening habits accordingly, as seen in the quotes.

6.3.2 Agency of music recommender systems

One of the central themes in this thesis is how algorithms can be seen as possessing agency and power to make users do things. All of the interviewees noticed several cases in which the recommender systems had influenced their actions. As already discussed on several occasions, many informants noted that algorithms are biased to personalization which often leads to filter bubbles. This has been maybe the most evident in the context of political campaigns and elections (Tufekci, 2014) but it is happening everywhere where something is consumed. While change in consumption of music may not be the most worrying phenomenon it was identified by users.

”Well, similar to any other algorithm like social media bubbles in Facebook, bubbles based on opinions or politics, I think that the same is happening in music so that it is becoming narrow.” (I3, 10)⁵⁸

⁵⁸ ”Et silleen mikä perustuu kaikkiin muihinkin algoritmeihin niinku vaikka Facebookissa klikkiytymiseen, mielipiteiden, poliittisen ajattelun klikkiytymiseen ni kyl mä mietin et vähän sama tapahtuu musiikissakin et sit se tulee tosi kapeeks se.”

”I think that somehow, the significance of people’s own intuition, thinking and such decreases when these AI gadgets replace them. So for example, the founder of Google had said in some interview that soon people don’t even have to type their searches because Google already knows what people are thinking, the system makes the searches instead of them. So it’s pretty worrying that it can be modelled how people think.” (I4, 8)⁵⁹

In the second quote above, an interviewee makes a guess that humans do not have to think or use intuition so much in the future, thanks to AI. If we think about Google search, for example, it anticipates your interests immediately when you start to type your inquiry. There are studies that have showed how dangerous this can be (Wong et al., 2016) as anticipatory search can frame your first impression of something in a powerful way.

The most common occasion in which the agency of the algorithms actualized was when the users did not know what to listen. One of the interviewees described this moment as 'adventurous vibe'.

”If I’m in adventurous vibe I go to the Daily Mixes (in Spotify) or Discover Weekly. But because my listening to music is very emotionally related I tend to go to playlists, for example, if I know that I want some 70’s music for driving car or for venturing I go there. - - But then if I have a pop-adventure feeling there are radios or ‘recommended for you for it.’ (I1, 4–5)⁶⁰

The majority of the informants noticed this affordance for drifting when they did not know what to listen. For some reason, sometimes the users did not have energy or time to figure out what they would like to listen or simply wanted to be surprised and that is when the algorithms were found the most useful.

⁵⁹ ”Jotenki semmonen ihmisen oma intuitio, ajattelu ja semmonen vähenee, sen merkitys vähenee kun tällaiset tekoälyvehkeet korvaa sen. Et just kyllähän toi Googlen perustaja ni sehän oli jossain haastattelussa sanonu että ei kohta ihmisten tarvi enää tehdä ees niitä hakuja että Google tietää jo valmiiksi jo mitä ihmiset ajattelee että se tekee ne hautkin niiden puolesta ni onhan se sillee vähän kuumottava ajatus että ihmisen koko ajattelu tavallaan pystytään jotenki mallintaan tai et sitä ei tarvii.”

⁶⁰ ”Jos mulla on seikkailufiilis ni sitten mä meen just sinne Dailyyn (Daily Mixes, Spotify) tai suositukset sinulle tai tämän viikon. Mutta koska mulla se on tosi paljon tunnekohtaista se musiikin kuuntelu sen takia mä meen enemmän tämmösiin soittolistoihin kuten jos mä tiedän et mä haluun jotain 70-luvun autolla ajo tai seikkailumusiikkia ni sitten mä meen sinne. - - Mut sitten taas jos mulla on enemmän semmonen pop-seikkailufiilis ni sitten on tommosii radioita tai sinulle suositellut.”

"If I have listened to a lot of music and I feel like I'm out of ideas what to type to the search box, then you need someone to recommend. Or if I have a feeling that I am open to new stuff. In practice, often they are weekday mornings and such." (I3, 6)

"Well it's Deezer's Flow, if I just want to listen to music but I don't know what specifically or if I have a feeling that I want to get my thoughts somewhere else and I'm tired of thinking what to choose." (I4, 5)

"Let's say, when I leave my home and I want to listen to something on my way, I'm like now I could listen to something new. Because I sometimes listen to it passively and when I hear some good stuff I put attention to, I usually click it and search for more." (I5, 5)⁶¹

"Well it's the bus trip to university. You ponder what you might want to listen, I don't know, after a second or two you notice that I can't figure out what to listen so let's check Discover Weekly." (I6, 5-6)⁶²

These quotes above illustrate the situations in which the users turned to algorithms. What these cases have in common is that the user feels he/she needs a push from outside to get something to be listened to. Mostly they are very casual everyday situations. Theoretically, these occasions reflect what marketing scholars call a shift from an era of searching to an era of discovery (Kotler et al., 2009, p. 755). If users do not have interest in figuring out what they might like, they can always let the system decide it for them.

Two or three interviewees had noticed that algorithmic recommendations have helped them to discover music in new ways. In the first quote below, an interviewee noticed how she was recommended various artists of "gay disco" after listening to it intensely some time. She was positively surprised by the recommendations because she admitted that she would have not

⁶¹ "Jos mä oon muutenkin kuunnellu tosi paljon musiikkia ja sit mulla on vähän takki tyhjänä siitä et mitäs nyt kirjottas tänne hakukenttään, et just tarvii sitä ulkopuolista suositusta ni ehkä sit siinä ja jos on muutenki semmonen fiilis että olis avoin uudelle ni sit sellasessa tilassa. Et usein ne on, jos tosi konkreettisesti sanoo nin arkiaamuja tai sellasia."

"No sitä (Deezerin Flow'ta) mä käytän että jos vaan haluaa kuunnella musiikkia mut ei tiiä että mitä tarkalleen tai sitte että jos on vähän semmonen että haluaa saada ajatuksia jonnekin muualle ku ei jaksa ees miettiä että mitä laittas soimaan."

"Sanotaan siinä ku lähtee ulos himasta ja haluaa kuunnella jotain matkalla ni sit on että nyt vois vaikka kuunnellaan jotain uutta. Koska mä kuuntelen sitäki silleen välillä vähän passiivisesti et sitte ku sieltä tulee joku hyvä juttu mihin kiinnittää huomioo ja sitten yleensä menee klikkailemaan eteenpäin et mikäs juttu tää on."

⁶² "No se dösämatka kouluun. Aattelee et mitähän sitä kuuntelis, en osaa sanoa, siin menee ehkä sekunti kaks ku tajuun et mä en tiedä mitä mä haluun kuunnella et tsekataa viikon suosituksset."

found them otherwise. Thus, the amplifying feature of this system, for her, was that it smoothened the path to new discoveries and did the work for her.

”Or then you can notice that you have listened to some music a lot earlier. After Flow Festival, I listened to a lot of so called gay disco and then I noticed that it started to recommend me various artists (from that genre) and it was just awesome because I would’ve never found those artists otherwise!” (I7, 7–8)

”The fact that the Daily Mix playlists have been working so well have reduced the times I would search an artist and listen to its music. So now I find it so easy that okay, it plays me something nice in any case so I just go listen to that playlist.” (I8, 5)⁶³

In the second quote above, an interviewee admits that after she started to use recommender systems, she now uses less time to discover new artists herself. This is also connected to what was discussed earlier about the agency of the algorithms and intuition of users. If these playlists work well enough, the users do not have to use their own skills of discovery or intuition to find artists. Of course, it is a matter of point of view, whether it is a good thing. Douglas Rushkoff (2011), for example, has been very critical of how we let commercial programs to make decisions for us.

One interviewee talked about how using algorithmic recommendations influenced how they categorize and organize music when listening to it. Systems provided possibilities to observe unexpected connections with different pieces of music, connections that may have been left unnoticed otherwise.

⁶³ ”Tai sit huomaa et on kuunnellu aikasemmin ehkä tosi paljon jotain tietyn tyyppistä tai et mä kuuntelin Flown jälkeen tosi paljon niin kutsuttua homodiskoa ja sit mä huomasin et se rupes tarjoon mulle eri artisteja ja mun mielestä se oli ihan mahtavaa koska mä en ois millään löytäny niitä artisteja muuten!”

”Se että ne (Daily Mix- listat) toimii niin hyvin on vähentäny sitä että mä menisin ja ettisin jonku artistin ja kuuntelisin siltä musiikkia. Et jotenki nyt tuntuu niin helpolle että aa se kuitenkin soittaa mulle jotain kivaa ni sit mä meen vaan kuuntelee sitä listaa.”

”- - It has provided me with special ways of categorizing music, it helped me, for example, to manage my own playlists, like what sounds what, so you could put together a coherent playlist of those songs. Speaking of perception, categorization and playlist-thinking, it has influenced my practices a lot.” (I2, 6)⁶⁴

Two interviewees had noticed that using recommender systems had clearly replaced some other form of listening. Some of them made less playlists own their own because the system provided decent lists automatically. In the second quote below, another interviewee tells how algorithmic playlists have replaced her habit of album listening. In her opinion, albums always have some unnecessary tracks so listening to automated playlists have relatively more good songs.

”I used to make a lot more playlists! That’s how the playlists have influenced me. Yeah. Earlier I had all these fancy own playlists. I did like a playlist dedicated for every month but I don’t do it anymore. I don’t curate to myself so much anymore.” (I3, 10)

”Daily Mix may have replaced a part of my album listening. So maybe it’s more like hat it’s easier and albums tend to have ‘not so good songs’ so it feels that Daily Mix gets it right (more often).” (I8, 5)⁶⁵

One interviewee noticed that due to algorithmic playlists, she tends to lose the context of the music itself. That is to say that while you are constantly being recommended a variety of artists in the form of lists in which music is pretty much reduced to written text, you are not paying attention – to put it roughly – to what the music is about. It is easier to forget the names of the artists, the names of the tracks and the background of the music because the recommendations are reduced to lists with no context.

⁶⁴ ”- - Se on tuottanu semmosia erikoisia tapoja lajitella musiikkia et se autto esimerkiks aika paljon omien soittolistojen tekemiseen et vähän mikä kuulosti miltäkin ni pysty laittaa yhtenäisen soittolistan niistä biiseistä mikä omaan korvaan kuulosti yhtenäiseltä et semmosen musiikin hahmottamisen ja lajittelun, semmonen soittolista-ajattelu, niin siihen se on kyl vaikuttanu tosi paljon.”

⁶⁵ ”Ennen mä tein paljon enemmän (soittolistoja)! Et siihen ne listat on vaikuttanu. Joo. Ennen oli kaikkia hienoja omia listoja. Mä tein just vähän joka kuukaudelle jonku oman listan ja näin, mut en mä enää tee sitä. Ei tuu enää ite kuratoitua itelle niin paljon.

”Daily Mix on korvannu ehkä enemmän sitä albumien kuuntelua. Et ehkä se on enemmän sillee että just helpompi ja ku albumeilla on aina semmosia ei niin hyviä biisejä ni sit ainaki tuntuu että se DM osuis oikeempaan.”

”Well, what I have noticed is that now when I have discovered music in this way for a few years I feel like I don’t know who I’m listening to anymore. Speaking of the starred list for example, when I play it from the beginning to the end, it has become like a sonic movie for me because I always know what (song) comes next. And despite there are hundreds of them there I somehow know what’s coming next. But what I don’t know, I can’t remember the names of the artists. And I may not know anything about the artists. - - Or what’s the culture where it’s made in.” (I7, 8)⁶⁶

About half of the users admitted due to recommender systems, their habits of listening to music may have become more incoherent or fragmented. That is to say that the users jump from artists or albums to another more often and in faster pace than before. Bad songs can be easily skipped and listening becomes fragmented since tracks are not listened in their original context, the album format. Many of the interviewees saw this as a slightly negative or bothering, acknowledging however, that this is somewhat a nostalgic way to think about it. This is a phenomenon that Flynn (2016), for example, describes as “conversive listening”. The streaming format affords users to shift between various listening positions almost instantly. Some albums may be listened immersively but then again, in a second, the user might come up with a song he/she wants to listen “right now”. Likewise, user can listen to a playlist quite superficially and one song can make an impact that leads the user to listen to that album the song is in.

”I tend to bounce between artists or albums. I would like it if I could still listen to it as an album. It’s somehow more rewarding. But it can also be just like that I miss the old times.” (I3, 2)

”Yeah, it somehow affords activity in which you listen from here and there, listening a song for a while and then changing or skipping the beginning of song, going straight to the middle in order to hear some particular things. So it’s kind of hectic.” (I4, 6)⁶⁷

⁶⁶ ”No sen mä oon huomannu että nyt ku mä oon muutaman vuoden tällä tavalla löytäny musiikkia ni mä en oikein enää tiedä ketä mä kuuntelen. Et ku se starred-lista esimerkiksi, et mä tiedän ku mä soitan alusta loppuun, et siitä on tullu mulle vähän semmonen äänellinen elokuva et mä aina tiedän mikä sieltä tulee seuraavaksi. Ja vaiks niitä on satoja siinä mut mä jotenki tiedän et mikä tulee seuraavaksi et se järjestys ja jotenki näin. Mut mä en kyl tiedä, en mä muista niiden artistien nimiä. Enkä mä tiedä niistä artisteista välttämättä mitään. - - Tai minkälaisessa kulttuuriympäristössä sitä musiikkia tehdään.”

⁶⁷ ”- - Mä poukkoilen tosi helposti siinä artistista tai levystä toiseen. Must ois kiva jos mä voisin viel kuunnella levyttäin sitä. Se on jotenki antoisampi puoli. Voi olla myös vaa vanhan haikailua.”

”Kyllä toi sitte vähän ohjaa sellaseen että tulee vähän sieltä täältä kuunneltua ja sit kuuntelee hetken aikaa jotain biisiä ja sitte vaihtaa tai sitte skippaa alun että meneeki keskelle että kuulee jotain tiettyjä juttuja. Et se on vähän sellasta hektistä.”

”This is nothing new but yeah, the listening has become more like listening to individual tracks, in increasing amounts. So yeah, I listen to albums as well but usually they are albums I have listened before Spotify, the ones I have on my shelf. But speaking of music I have found from recommender systems, I rarely listen to whole albums. - - And with classical music, it’s now more like that okay, I like the third part of this symphony and this band particulalrly so I only listen to that one piece. It’s also a clear difference that seems to have strengthened, well not strenghtened but normalized, so you don’t put attention to it.” (I7, 9)⁶⁸

6.3.3 Power of algorithms

When discussing the strengths and weaknesses of artificial intelligence, in general, all interviewees mentioned some examples of how algorithms possess power in different situations. Some were worried that recommender systems spy more and more people and create filter bubbles by fragmenting the content based on whom it is distributed for. Some noted that algorithms are developed by capitalist interests which could have an impact on what kind of activity they are favoring over others. One interviewee, with a background in music studies, noted that recommender systems might become more biased to 'stock market' over 'the cathedral'. That is to say that if algorithms favor popularity and commercial interests over editorial logic, they can significantly influence how music is consumed in future.

”I cant’ remember the name of the philosopher right now but he/she had this idea that big data, because it’s developed, I mean all the artificial intelligence is more or less developed by commercial interests. That’s why it has a marketing logic that drives the development of the whole technology. That’s why it’s really important to understand the principles of this logic and how it modifies these systems. - - Well yeah, if we think that artificial intelligence is a product of the capitalist logic, as a result, the gap between the cathedral and the stock market might get too big.” (I7, 10)⁶⁹

⁶⁸ ”Tää on nyt vanha juttu mut kyl siit on tullu semmosta yksittäisten raitojen kuuntelua kasvavassa määrin. Et mä kyl kuuntelen albumeitakin mut yleensä ne albumit on semmosia mitä mä oon kuunnellu jo ennen Spotify-aikaa, semmosia mitä mul on hyllyssä. Mut sit nää suositusjärjestelmän kautta tulleet ni harvemmin mulla on siellä kuuntelussa kokonaisia albumeita niiltä. - - Ja sit klasarikin on menny just sellaseen et okei mä tykkään ton sinfonian kolmannesta osasta ja just tosta bändistä et mä kuuntelen vaan sitä yhtä osaa. Se on semmonen selkee ero kanssa, joka tuntuu et on vahvistunu, tai ei vahvistunu mut ehkä normalisoitunu tässä, et siihen ei kiinnitä huomiota.”

⁶⁹ ”En just muista hänen nimeään mutta filosofin ajatus siitä että tämmönen big data, koska se on kehitetty, siis kaikki tää keinoäly on tällä hetkellä enemmän tai vähemmän, sitä kehittää kaupalliset intressit. Niin silloin siinä on semmonen markkinoinnin logiikka mikä ajaa sitä koko teknologiaa eteenpäin. Silloin on äärimmäisen tärkeää ymmärtää ne sen logiikan perusteet ja miten se rupee muokkaamaan sitä järjestelmää. - - Et joo jos ajatellaan niin että keinoäly on tälläsen kapitalistisen logiikan tuote niin silloin ehkä tää katedraalin ja pörssin juopa saattaa eriytyä jotenkin sillä lailla ehkä liikaa.”

One reason for concerns might be that users do not know how these systems work. In the second quote below, and interviewee uses a concept of a 'black box' which is to say that we cannot see inside the system and evaluate its core principles. As discussed in literature review, these boxes are commercial products which is why their code is not willingly shared but safely guarded from rival companies.

"- - Speaking of services that are based on that they collect data of people and created models and profiles of them and algorithms that recommend stuff and all the google search results and stuff, I'm more worried about them than gratified." (I4, 8)

"I find it really interesting. And I think that it should be a thing that should be explained to people, how it works. It's present in various things but I don't like that black box policy. - - In my opinion, it would be really important to speak about it in a sense that people could understand how it's technology that is made for certain purpose and made by humans." (I7, 9)⁷⁰

One interviewee noticed that she was constantly recommended a song she did not like at first. After a long period of 'spamming', however, she finally started to like the song but she described the process as "slightly brainwashing". This is an example of how algorithms can have an impact on the consumption of music of users in a very concrete way.

"I also remember that with a couple of songs it has turned out that when it had recommended them to me, at first I was like 'skip skip, I'm not definitely listening to them but later on I have started to listen to them because it simply spams them to me. I gave up at some point and was like okay, I go them through. And in the end, it has been a decent song and now I listen to it willingly. But that's kind of brainwashing." (I8, 5)⁷¹

The power of recommender algorithms can be analyzed in light of Gillespie's (2014) dimensions that make this technology political. Gillespie names six of them but I will go through only the

⁷⁰ "- - Aina näissä tämmösissä palveluissa jotka perustuu siihen että ne kerää tietoa ihmisistä ja sen perusteella ne luo jotain malleja ihmisistä ja profiloi niitä ja algoritmien perusteella suosittelee sitten jotain kamaa ja kaikki google-hakutulokset ja tälläiset ni kyllä ne enemmän kuumottaa kun että ois niistä mielissään."

"Musta se on hirveen mielenkiintosta. Ja musta sen pitäis olla sellanen asia, mitä ihmisten pitäis, mikä pitäis avata ihmisille, miten se toimii. Se on läsnä hirveen monessa asiassa mut mä en tykkää siitä black box -meiningistä. - - Mun mielestä ois tosi tärkeää että puhua siitä sellasella tavalla että ihmiset ymmärtäis et se on tarkoitusta varten tehtyä ihmisen tekemää teknologiaa."

⁷¹ "Ja sitte kans se että mä muistan et parin biisin kanssa on käynny sillee että ku se on suositellu niitä mulle, aluks mä oon vaa ollu että skip skip, et en todellakaan kuuntele ja sitte oon myöhemmin päätyny kuuntelemaan niitä ku se yksinkertaisesti spämmää niitä mulle. Mä oon jossain vaiheessa luovuttanu ja ollu sillee että no mä nyt kuuntelen läpi. Ja sit se on olluki ihan hyvä biisi ja nykyään sitä kuuntelee sillee mielellään. Mut tämmöstä lievää aivopesua."

relevant ones in this context. First, algorithms decide what is included in the ‘index’. In the context of music recommender systems, this could mean that music that has detailed metadata has a better chance of getting into the pool from which music is selected. This was already seen when users talked about different biases: cultural, geographical and genre-related. Second, algorithms try to anticipate the preferences of users (which most likely is based on the user activity) and evaluate the relevance. Evaluation, however, needs certain rules – criteria that users can only guess. Third, algorithms are easily perceived as neutral or objective since they are machines and not humans but as we have seen, there are various biases, commercial for example, that may distort output.

6.4 Nature of interaction

The majority of the interviewees saw that interaction with recommender systems was not 'real' or it was 'colder' or more clinical than with humans. While recommender systems are enjoyable, a pleasing way of discovering music and personal, they provide only “guided experience” which is fundamentally different than when interacting with friends or radio. One of the interviewees actually questioned whether using algorithmic recommendations is interaction at all. One reason for this was that you cannot really for sure why something is recommended for you. When you get a recommendation from a friend, you mostly get some information on why you would like this piece of music. Recommender systems were perceived insensitive and mechanical – in opposition to humans who are sentient and non-mechanical beings. Friends have a sort of 'social responsibility' to explain why they have recommended something while algorithms do not.

”The discussion situation is maybe a more natural way of sharing ideas and thought of what music is. - - It’s not so... well cold and warm, in a way, computer-based (recommending) is pretty insensitive and mechanical but the interaction situation with friends, in turn, constructs a more humane way of speaking about music or be in interaction with the music or with the recommendations.” (I2, 6)⁷²

⁷² ”Se keskustelutilanne on ehkä sellain luonnollisempi jakaa ideoita ja ajatuksia siitä mitä se musiikki on. - - Et se ei oo niin semmosta.. noh kylmä ja lämmin et tavallaan tietokonepohjanen on semmosta aika tunteetonta ja mekaanista mut sit se vuorovaikutustilanne tuttavien tai kavereiden kanssa niin tota se muodostaa semmosen vähän inhimillisemmän tavan puhua musiikista tai olla vuorovaikutuksessa siihen musiikkiin tai niihin suosituksiin.”

”Maybe it’s like that Spotify is so much more personal compared to radio. You listen to Spotify alone and you are interacting with no one but when you listen to radio you are. Radio is more like, although you don’t communicate there yourself it’s not only for me but meant for big audience so you approach it differently.” (I3, 8)⁷³

In the quote below, an interviewee speculates that if he got a personal playlist from Bassoradio's DJ, he would value it over playlists he has had from recommender systems. Being recommended by an algorithm, for him, is “slightly artificial” compared with human curation. These quotes illustrate how the idea of 'human touch' in curation is still deeply rooted in us although we might positively relate to the technology itself. This view is in line with what has been discussed in media in the past few years: to recommend something is seen as an “emotional task” that machines are incapable of (for example Popper, 2015).

”In my opinion, it’s kind of artificial feeling you could compare to, as a human experiment, if some person... if DJ from Basso(radio) - - if he/she came to me like ‘hey, I have watched your Last.fm history, I have made you an hour playlist of music’, I would definitely listen to it! I would put on my calendar, like ‘now I listen to this mix’. Yeah, it is more powerful.” (I6, 10)⁷⁴

Strongly related to the idea of cold interaction, about half of the interviewees stated that in their opinion, recommender systems are somewhat stuck in the comfort zone; the algorithm does not ‘challenge’ its users compared with human curators. It was a common conception that recommender systems eventually make the content less varied and falls to a ‘filter bubble’. This is a discussion in which the tension between algorithmic and editorial logics becomes visible (Gillespie, 2014): paradoxically, personalized recommendations are welcomed but if they become ‘too personalized’ they become boring or repetitive. This is also connected with the idea that music is listened to not only to get the same feelings as always and for pure enjoyment but also to get new ideas and to get out of the comfort zone.

⁷³ ”Ehkä se on sitä kautta että Spotify on niin paljon henkilökohtaisempi kun sit radio on. Spotifyta kuuntelee yksin ni siinä ei oo kenenkään kanssa vuorovaikutuksessa mutta radion kanssa kun on. Radio on enemmän sellanen et vaikka sinne ei kommunikoikaan mut se ei oo kuitenkaan vaan mulle vaan se on suunnattu suurelle yleisölle ni siihen suhtautuu myös eri tavalla.”

⁷⁴ ”Mun mielestä siin tulee vähän semmonen keinotekonen tunnelma jota vois ehkä verrata siihen, nyt tämmösenä ihmiskokeena, et jos joku ihminen sen mulle... jos joku Basson DJ - - jos se tulis mulle et hei mä oon päässy kätteleen sun Last.fm:iä, mä oon tehny sulle nyt, tässä on tunti musaa ni todellakin kuuntelisin! Et laittasin ihan kalenteriin et nyt mä kuuntelen sen mixin. Joo et kyl siinä on aika paljon suurempi voimakkuus.”

"I think that if they (=recommendations) are produced somehow really mathematically, what kind of music it offers. I fear that it may make music more alike based on certain features. In radio, a talented music journalist could have a wider scope and have parameters that cannot be put in algorithms." (I3, 9–10)

"In any case, speaking of algorithms that are on internet and follow users and recommend stuff based on that, I find it as a big problem that it narrows what you see." (I4, 4)⁷⁵

"Bassoradio has a wider range when it comes to sounds but... during autumn when I listened to a lot of Basso, I can't remember a single time I had thought 'this is a bad song'. I'm usually so excited. Techno, house and various rap stuff. And then something else mixed with that and I'm usually like 'nice'! Cool that Basso plays something like this. Compared to that, Discover Weekly is pretty homogenic, after all. - - It begins to repeat itself." (I6, 7–8)⁷⁶

Thus, while recommender systems were largely criticized for being random, it does not guarantee that they will provide novelties that users feel like having. This is again connected with the fourfold table of good recommendation, provided by Celma & Lamere (2011). If recommender services offer mostly a filter bubble with occasional misses or random content, it fails to excite its users. Thus, recommender systems are not only expected to mine the data in order to find what users want but also to surprise them positively.

"I mean that if, for example, curation based on artificial intelligence increases... I can't see how it wouldn't affect all other curation as well. Like, you can't say that it's just a nice addition because you still have limited time to use for listening music." (I3, 10)⁷⁷

One interviewee also brought up that as these new forms or recommender systems gain popularity it is likely to influence the 'old' forms of recommendation. The time used to listen to music is, however, limited and if people are using more these systems, they will eventually use

⁷⁵ "Mut tuntuu et jos se tulee jotenkin tosi matemaattisesti se et minkäläistä musiikkia se tarjoaa, ni mä pelkään et se vähän samankaltaistaa musiikkia liikaa vaan niiden tiettyjen ominaisuuksien mukaiseksi. Jossai radiossa taitava musiikkitoimittaja osaa ehkä kattoo paljon laajemmalla skaalalla ja sellasilla mittareilla mitä ei voi algoritmiin syöttää."

"Muutenkin näissä netin algoritmeissa mitkä tavallaan seuraa käyttäjää ja suosittelee sen perusteella ni kyl mä pidän aika paljon ongelmana sitä että se sitte yksipuolistaa sitä sitte tavallaan et mitä näkee."

⁷⁶ "Bassolta tulee aika laajempaa mitä siihen soundiin tulee mutta... mä en varmaan kertaakaan ku mä oon nyt tos syksyllä paljon kuunnellu bassoa ni varmaa kertaakaan aatellu et tää on huono biisi. Mä oon yleensä ihan sika fiiliksissä. Just teknoo ja housee ja erilaisia räbäjuttuja. Ja sit jotain muuta sinne sekaan ni kaikista mä oon yleensä silleen nice! Siistii et basso soittaa tällästä näin. Siihen verrattuna se viikon suositukset on aika homogeeninen sit kuitenkin. - - Se just välillä alkaa toistaa itseään."

⁷⁷ "Mä tarkotan sitä että jos vaikka tommonen tekoälyyn perustuva kuratointi lisääntyy tosi paljon ni eihän se ikinä... tai mä en jotenkin nää etteikö se vaikuttais kaikkeen muuhun kuratointiin myös. Et sitä just et ei voi sanoo et tulee vaan kivaks lisäks et ku sulla on kuitenkin rajallinen aika käyttää musiikin kuunteluun ni ainahan se on jostain pois."

less the old forms. This is very much in line what has already been discussed about algorithms' ability to reshape culture, not only reflect it.

7 DISCUSSION

In the final chapter, I will provide my conclusions and answer my research questions. Furthermore, the success of the research project is reflected in terms of its implications and limitations as well as my own experiences of conducting the thesis.

7.1 Summary of findings

The overall research aim of this thesis was to focus on how users perceive music recommender systems and act with them with various ways. The majority of the research has addressed the systems themselves with the objective of developing them but in this thesis, instead, I have looked for answers to how algorithmic personalized music recommender systems, as relatively new technology, have been welcomed by the users and how these systems participate in the listening and discover practices in both visible and invisible ways. In broad sense, the objective of this thesis is to participate in the current debate on how software and algorithms are becoming more and more ubiquitous in our society and possess agency and power we can't afford to neglect. Speaking of music, music recommender systems reflect this 'becoming' and have a significant impact on the music market that is still worth 15.7 billion US dollars globally – with digital share covering approximately half of it (IFPI 2017). Thus, analyzing how these systems work and are being domesticated is anything but irrelevant. As a recap, here are my research questions:

- How recommender systems shape and participate in the practices of music discovery and consumption of the users?
 - *How music recommender systems are perceived to meet the taste of the users?*
 - *Why the recommendations are seen as relevant or irrelevant?*
 - *How agency is constituted in the collaboration between user and recommender system?*

To answer these questions, I collected empirical data based on eight semi-structured interviews. To answer the *first* sub-question about taste, I first did some background research about how the informants described their taste. It turned out that practically all of them considered their taste as wide, as something that can be characterized as *cultural omnivorousness* (Purhonen et

al., 2014). Thus, the perceptions of the ability of the recommender systems to learn the taste of the user varied a lot. In some cases, recommendations were perfect and constructed a stylistic or aesthetic ‘profile’ of the user whereas in other cases, users thought that recommender systems made too simplifying deductions or misinterpreted the taste totally. The attitude towards recommendations was also shaped by how users perceived themselves as discoverers of music. For some, cultural intermediaries and friends were important sources of new music whereas for others, institutional recommenders such as music journalists were considered as moralizing and force-feeding certain aesthetics. The latter observation is interesting since it can be seen as an example of what sociologist Pierre Bourdieu (1984) has talked about cultural hegemony and the ability of those with high cultural capital to control the formation of ‘good’ taste.

The *second* sub-question is closely related to the first one since the ability of the recommender system to interpret the taste of the users is actualized in the recommendations and their perceived relevance. It turned out that music recommender systems, like any digital technology, have its biases and affordances. Speaking of relevance, all the interviewees stated that personalized algorithmic recommendations should reflect a certain state of mind or context of the listening situation. In chapter 5, I discuss how music was often used to boost emotions but also as something that can change them. Music could be used in so many different and often arbitrary ways that even the users cannot always tell why they choose or want to listen to something. Given that, it is not a surprise that the algorithm fails to please the user on a regular basis. Another tension emerges from the dilemma that recommendations should be simultaneously something novel or new and still somehow familiar or relevant. If a recommendation is too familiar it is considered ‘too safe’ and not challenging enough and if it is not familiar enough, it is often considered as irrelevant.

Several biases or affordances of algorithmic recommender systems that had either amplifying or reducing effects (see Ihde, 1990) were introduced in this thesis. In overall, users thought that recommender systems tended to lose the context of discovering or listening to music. The main reason for this was that users could not specify why they had listened to certain type of music. The usage history is, however, the data that is used to produce the forthcoming recommendations. Algorithmic recommendations were perceived as biased to quantitative efficiency over qualitative, ‘deeper’ understanding. This is where human curators were seen as somehow more qualified since they can understand the complex meanings of music better. Other biases were related to genres, popularity, regions and cultures and commerce. Genre-

related relevance is to say that if you listen to genre A you are more likely to get better recommendations than if you listen to genre B. Similar issues were found in terms of geographical or cultural regions: the more distant are or culture, the less varied was the scope of recommendations. For example, Korean music was reduced to mainstream artists despite the preferences of the listener. Biases related to popularity and commerce referred to situations in which the user felt he/she was recommended 'too commercial' or too mainstream music compared with one's own perception of his/her taste.

Third theme that was addressed in this thesis was how agency is constituted in the cooperation between the user and the system. In chapter 6, I analyzed how users dealt with the recommendations, how they reacted to them and how they became proactive in some cases. About a half of the interviewees had not just reflected the recommendations but also noticed that they had had an impact on how they used them in future. This was evident especially in situation in which users had listened to some music ironically or just for fun. Recommender systems could not interpret these situations and started to recommend music that had been nothing but a bad joke.

The most common situation in which the agency of the algorithms became evident was when the users could not decide what to listen to. In these situations, recommender systems had an active and often decisive role in choosing music. Although it is the whole point of recommender systems – to provide added value for discovery – it is crucial to acknowledge on what principles these systems work in this regard. For example, Douglas Rushkoff (2011) has addressed the problem of commercial software that frames the reality for us and makes decisions for us. Although users thought that recommender systems had provided them new ways to categorize and organize music it also seemed to make listening more incoherent or fragmented as well as decontextualized. For example, users thought that they also seemed to lose the context of the music. That is to say that it is easier to forget the names of the songs and the artists when you listen primarily to playlists of the unknown songs. The music is then just a flow of unfamiliar pieces with no context that may have been provided by a friend or a music journalist.

7.2 Conclusions

In overall, it can be stated that music recommender systems shaped and participated in the ‘musical agency’ of the users in various ways. As I discussed in literature review, music recommender systems should be analyzed more as part of *softwarization* (see Manovich, 2013), as part of technological change where software is becoming the interface of our lives. Recommender systems, as *coded assemblages* (see Kitchin & Dodge, 2011, 6–7), have an increasingly central role in choosing what information or content is considered relevant (Gillespie, 2014). Why these assemblages are so intriguing is that they include so many simultaneous processes in which information is produced and used. If we think of recommender systems, they use various techniques and data in order to construct these playlists: data of usage (both the user and its peers), musical and contextual data and data from social media, to name a few. Furthermore, we can only guess what processes are running in the background of these ‘black box’ systems. However, they construct an assemblage of great interest that should be studied more.

As we can see from the analysis, this relevance is often negotiated, reflected and followed by a response – as a change in behavior. I also analyzed music recommender systems in light of Lievrouw’s (2014, p. 46) mediation framework that sheds light to how communication technology and its use is constantly reconfigured, remediated and reformed. Algorithmic weekly recommendation playlists have indeed changed how people listen to music as we can see from the analysis and usage of those playlists is in a constant state of reconfiguration since users fill it with new usage data and the algorithm is updated regularly. Thus, the only thing we can take for granted is that everything is at change.

In this thesis, I have sought to open up discussion of how the agency and significance of music recommender systems should be more in terms of how users perceive them and actually use them. The results provide new knowledge on how these systems influence on our music consumption in various implicit and explicit manners. Still, I found this research only as a starting point because music recommender systems – the contemporary ones included in streaming services – are still relatively new technology. For example, Spotify’s Discover Weekly which is a showpiece of this technology was released not until in 2015, at the time I started to study this topic. That is why we cannot say much of what will happen in the future but only inspect how users have put these systems into service.

7.3 Reflection: limitations and implications

A few limitations of this study have to be addressed. In overall, it has to be noted that qualitative research is always situational since it acknowledges that there are multiple ‘truths’ that depend on the point of view (see Hakala, 2015, p. 21–22). More specifically, one potential limitation emerges from the selection of the data collection method. I chose focused interview because I deduced that it is the best way to answer my current research questions. Interviews, however, have their own limitations and pitfalls. For example, as an interviewer, it is always possible that I led the discussion in a manner that produced answers that I anticipated or wanted to hear. Although this is always a part of qualitative research which is situational but it can be a problem if informants start to give “socially acceptable answers” to the researcher (Hirsjärvi & Hurme, 2008, p. 35).

Another thing is that although interview is a good method for analyzing the opinions and thoughts of informants it does not guarantee that they act or implement these ideas in real life. During the research process, I pondered whether to use interview or observation as my data collection method. Observing the actual usage of these systems would probably have provided different information and results but it was rejected in this thesis. It can be also problematic to establish a ‘natural’ situation in which the user can use the system and report what s/he is doing.

Third limitation is obviously the data itself. All the informants were recruited by a Facebook post and the only requirement to be eligible for the interview was that one would be interested in the topic. Thus, the selection of the informants was not based on any specific reference group which is recommended in guide books (Hirsjärvi & Hurme, 2008, p. 60, 83). Furthermore, a half of the interviewees had a background in music studies which is something that has to be addressed. Like a blessing and a curse, it made possible to get well informed opinions about the topic but at the same time, it made data more incoherent.

For further research, I would suggest that following studies would put attention more to what is actually happening rather than how people talk about. Through (participatory) observation, it would be possible to analyze how algorithmic music recommender systems are used in everyday life. Further studies could also focus on specific recommender systems such as Spotify’s ‘Discover Weekly’ or Deezer’s ‘Flow’ in order to take a closer look on what characteristics they have and how they influence on the user. Another crucial point is what one

interviewee pointed out: algorithmic curation is a new form of curation and since users/listeners have a limited time to discover new music, it is likely that algorithmic curation has its consequences on the ‘traditional’ or ‘institutional’ curation. This is something that may not be visible at the moment but it will be really interesting to think in a few years.

Connected with this, it would be also interesting to put attention to how the emergence of cultural omnivorousness could be linked with new technologies such as recommender systems. For example, it could be approached by the concepts of supply and demand since it is unclear whether these recommender systems afford users to become more like cultural omnivores or are these systems manufactured for omnivores in the first place. In light of the analysis, music recommender systems seem to afford a more varied taste for some while constructing filter bubbles for others.

In the end, the thesis is mainly a piece of work that shows what one has learned during the research process. Thus, I would like to offer some concluding reflections on how I found doing it. The process began three years ago so it has been a long way with ups and downs. Three years may not be optimal for maintaining the focus but on the other hand, it gave me enough time to scrutinize my objectives. Without question, this thesis is the biggest piece of literary work I have ever made. It has been a wonderful trip of discovery, mixed with confusion, unbelief, success and feeling of being relevant and important to the academic community.

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Appendices

Appendix 1. The interview frame.

Theme 1: Background information (age, education etc.)

Theme 2: Conventions of listening to music

- What music means to you? (how much, where, when... examples)
- Genres/elements
 - Preferences, potential sources of influence?
 - Significance of situation?
- Formats
 - Preferences, potential sources of influence?
 - Significance of situation?
 - Other reasons: aesthetics, politics, values
 - Importance of social relations

Theme 3: Experiences of discovering music

- Idea of a good recommendation
 - Familiar enough, completely new, what are you looking for?
 - Significance of situation?
- Used sources of recommendations (examples of good discoveries)

Theme 4: Usage of streaming services

- Used services; pros and cons
- Situations when used

Theme 5: Usage of automated recommender systems

- Used services and services within them
- Frequency of usage (how long, how much, for what purposes?)
- Usage in practice: describe what is actually happening

Theme 6: Experiences of automated recommender systems

- Relevance of recommendations
 - In relation to idea of a good recommendation (see theme 3)
 - Connections interpreted by the system vs. connections assumed by the user
 - Interpretations of how recommendations are produced? Boosting or hiding something?
 - Compared with other sources of recommendations?
- Consequences of recommendations
 - Changes in preferences? Agency, affordances

Theme 7: Attitude towards AI

- Images and opinions about AI
- AI as a recommender of music
 - Expectations vs. experiences
 - AI vs. other sources of recommendations
 - Personality?
 - Amplifying vs. reducing elements?